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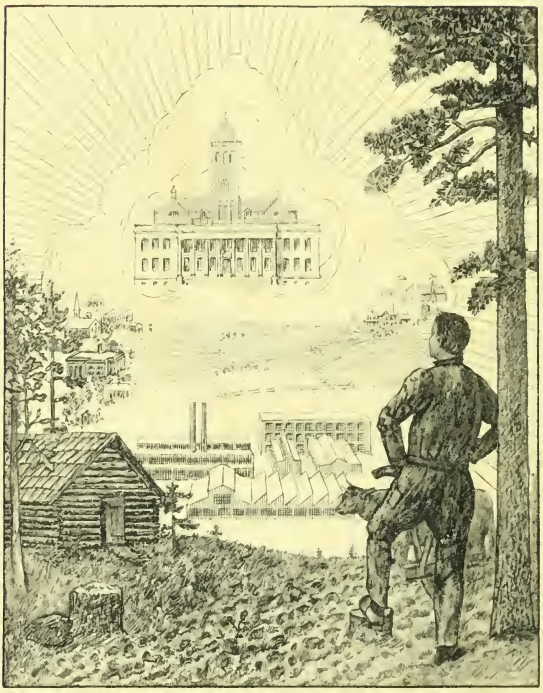

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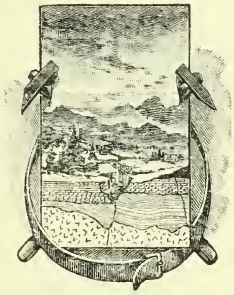

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DEPARTMENT OF THE INTERIOR
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WATER-SUPPLY PAPER 310

SURFACE WATER SUPPLY OF THE UNITED STATES

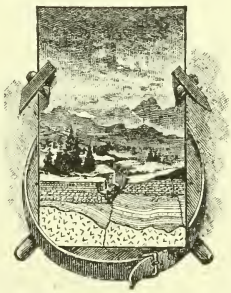
1911

PART X. THE GREAT BASIN

PREPARED UNDER THE DIRECTION OF M. O. LEIGHTON

BY

F. F. HENSHAW, H. D. McGLASHAN, AND
E. A. PORTER



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SURFACE WATER SUPPLY OF THE GREAT BASIN, 1911.

By F. F. Henshaw, H. D. McGlashan, and E. A. Porter.

AUTHORIZATION OF WORK.

This volume is Part X of a series of 12 reports presenting results of measurements of flow made on certain streams in the United States during the calendar year 1911. The reports are listed in the following table:

Papers on surface water supply of the United States, 1911.

Part.[a]	No.	Title.
I	301	North Atlantic coast.
II	302	South Atlantic coast and eastern Gulf of Mexico.
III	303	Ohio River basin.
IV	304	St. Lawrence River basin.
V	305	Upper Mississippi River and Hudson Bay basins.
VI	306	Missouri River basin.
VII	307	Lower Mississippi River basin.
VIII	308	Western Gulf of Mexico.
IX	309	Colorado River basin.
X	310	Great Basin.
XI	311	Pacific coast in California.
XII	312	North Pacific coast.

[a] For the purpose of uniformity in the presentation of reports, a general plan has been agreed upon by the United States Reclamation Service, the United States Forest Service, the United States Weather Bureau, and the United States Geological Survey, according to which the area of the United States has been divided into 12 parts, whose boundaries coincide with natural drainage lines indicated by the parts of the report.

The data presented in these reports were collected by the United States Geological Survey under authority implied in the organic law (20 Stat. L., p. 394) which contains the following paragraph:

Provided, That this officer [the Director] shall have the direction of the geological survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies of water supply for irrigation.

Since the fiscal year ending June 30, 1895, successive sundry civil bills passed by Congress have carried the following item and appropriations:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal year ending June 30—

1895	$12,500
1896	20,000
1897 to 1900, inclusive	50,000
1901 to 1902, inclusive	100,000
1903 to 1906, inclusive	200,000
1907	150,000
1908 to 1910, inclusive	100,000
1911 to 1913, inclusive	150,000

In the execution of the work many private and State organizations have cooperated. Acknowledgments for such cooperation is made on page 15 and also in connection with the description of each station affected by the cooperative work.

PUBLICATIONS.

Measurements of stream flow have been made at more than 2,000 points in the United States and also at many points in small areas in Seward Peninsula and the Yukon-Tanana region, Alaska, and in the Hawaiian Islands. During 1911 gaging stations were maintained by the Survey and the cooperating organizations at about 1,500 points in the United States, and many discharge measurements were made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in the regular surface water supply papers from time to time. A complete list of the gaging stations maintained by the Survey to and including 1910 and a list of the papers relating to the water supply of the country has been published as Water-Supply Paper 280. An index to the reports containing stream-flow measurements prior to 1904 has been published as Water-Supply Paper 119.

For each calendar year there has been prepared a report embodying the stream-flow data collected during that year, which has been published either as a part of the annual report of the Director, as a bulletin, or as a water-supply paper, as shown by the following table:

Stream-flow data in reports of the United States Geological Survey.

[A=Annual Report; B=Bulletin; WS=Water-Supply Paper.]

Report.	Character of data.	Year.
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge	1884, to Sept., 1890.
12th A, pt. 2	do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
WS 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896.
WS 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
WS 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
WS 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898.
WS 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
WS 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
WS 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
WS 65, 66	Descriptions, measurments, gage heights, and ratings	1901.
WS 75	Monthly discharge	1901.
WS 82 to 85	Complete data	1902.
WS 97 to 100	do	1903.
WS 124 to 135	do	1904.
WS 165 to 178	do	1905.
WS 201 to 214	do	1906.
WS 241 to 252	do	1907–8.
WS 261 to 272	do	1909.
WS 281 to 292	do	1910.
WS 301 to 312	do	1911.

NOTE.—No data regarding stream flow are given in the 15th and 17th annual reports.

The table which follows gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1911. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Me., 1903 to 1911, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, and 301, which contain records for the New England streams from 1903 to 1911.

Numbers of water-supply papers containing results of stream measurements, 1899–1911.

	1899[a]	1900[b]	1901	1902	1903	1904
North Atlantic coast (St. John River to York River)	35	47, [c] 48	65, 75	82	97	[d] 124, [e] 125, [f] 126
South Atlantic coast and eastern Gulf of Mexico (James River to the Mississippi)	[g] 35, 36	48	65, 75	[g] 82, 83	[g] 97, 98	[f] 126, 127
Ohio River basin	36	48, [h] 49	65, 75	83	98	128
St. Lawrence River and Great Lakes	36	49	65, 75	[i] 82, 83	97	129
Hudson Bay and upper Mississippi River	36	49	[j] 65, 66, 75	[j] 83, 85	[j] 98, 99, 100	[j] 128, 130
Missouri River	[k] 36, 37	49, [l] 50	66, 75	84	99	130, [m] 131
Lower Mississippi River	37	50	[j] 65, 66, 75	[j] 83, 84	[j] 98, 99	[j] 128, 131
Western Gulf of Mexico	37	50	66, 75	84	99	132
Colorado River	[n] 37, 38	50	66, 75	85	100	133
Great Basin	38, [p] 39	51	66, 75	85	100	133, [q] 134
Pacific coast in California	38, [r] 30	51	66, 75	85	100	134
North Pacific coast	38	51	66, 75	85	100	135

	1905	1906	1907–8	1909	1910	1911
North Atlantic coast (St. John River to York River)	[d] 165, [e] 166, [f] 167	[d] 201, [e] 202, [f] 203	241	261	281	301
South Atlantic coast and eastern Gulf of Mexico (James River to the Mississippi)	[f] 167, 168	[f] 283, 204	242	262	282	302
Ohio River basin	169	205	243	263	283	303
St. Lawrence River and Great Lakes	170	206	244	264	284	304
Hudson Bay and upper Mississippi River	171	207	245	265	285	305
Missouri River	172	208	246	266	286	306
Lower Mississippi River	[j] 169, 173	[j] 205, 209	247	267	287	307
Western Gulf of Mexico	174	210	248	268	288	308
Colorado River	175, [o] 177	211	249	269	289	309
Great Basin	176, [q] 177	212, [q] 213	250, [q]251	270, [q]271	290	310
Pacific coast in California	177	213	251	271	291	311
North Pacific coast	[s] 177, 178	214	252	272	292	312

[a] Rating tables and index to Water-Supply Papers 35–39 continued in Water-Supply Paper 39.
[b] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation n California and Utah contained in Water-Supply Paper 52.
[c] Wissahickon and Schuylkill rivers to James River.
[d] New England rivers only.
[e] Hudson River to Delaware River, inclusive.
[f] Susquehanna River to Yadkin River, inclusive.
[g] James River only.
[h] Scioto River.
[i] Lake Ontario and tributaries to St. Lawrence River proper.
[j] Tributaries of Mississippi from east.
[k] Gallatin River.
[l] Loup and Platte rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[m] Platte and Kansas rivers.
[n] Green and Gunnison rivers and Grand River above junction with Gunnison.
[o] Below junction with Gila.
[p] Mohave River only.
[q] Great Basin in California, excepting Truckee and Carson drainage basins.
[r] Kings and Kern rivers and south Pacific coast drainage basins.
[s] Rogue, Umpqua, and Siletz rivers only.

DEFINITION OF TERMS.

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those which represent a rate of flow, as second-feet, gallons per minute, miner's inches, and run-off in second-feet per square mile, and (2) those which represent the actual quantity of water, as run-off in depth in inches, and acre-feet. The units used in this series of reports are second-feet, second-feet per square mile, run-off in depth in inches, and acre-feet. They may be defined as follows:

"Second-foot" is an abbreviation for cubic foot per second and is the unit for the rate of discharge of water flowing in a stream 1 foot wide, 1 foot deep, at a rate of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the accompanying table of equivalents.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off, depth in inches," is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

An "acre-foot" is equivalent to 43,560 cubic feet, and is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.

Discharge (second-feet per square mile).	Run-off (depth in inches).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.223
9	.33471	9.372	9.707	10.041	10.376

NOTE.—For partial month multiply the values for 1 day by the number of days.

Table for converting discharge in second-feet into run-off in acre-feet.

Discharge (second-feet).	Run-off (acre-feet).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	1.983	55.54	57.52	59.50	61.49
2	3.967	111.1	115.0	119.0	123.0
3	5.950	166.6	172.6	178.5	184.5
4	7.934	222.1	230.1	238.0	246.0
5	9.917	277.7	287.6	297.5	307.4
6	11.90	333.2	345.1	357.0	368.9
7	13.88	388.8	402.6	416.5	430.4
8	15.87	444.3	460.2	476.0	491.9
9	17.85	499.8	517.7	535.5	553.4

NOTE.—For partial month multiply values for 1 day by the number of days.

1 second-foot equals 40 California miner's inches (law of March 23, 1901).
1 second-foot equals 38.4 Colorado miner's inches.
1 second-foot equals 40 Arizona miner's inches.
1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.
1 second-foot for one year covers 1 square mile 1.131 feet or 13.572 inches deep.
1 second-foot for one year equals 31,536,000 cubic feet.
1 second-foot equals about 1 acre-inch per hour.
1 second-foot for one day equals 86,400 cubic feet.
1,000,000,000 (1 United States billion) cubic feet equals 11,570 second-feet for one day.
1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.
1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.
1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.
1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.
100 California miner's inches equals 18.7 United States gallons per second.
100 California miner's inches for one day equals 4.96 acre-feet.
100 Colorado miner's inches equals 2.60 second-feet.
100 Colorado miner's inches equals 19.5 United States gallons per second.
100 Colorado miner's inches for one day equals 5.17 acre-feet.
100 United States gallons per minute equals 0.223 second-foot.
100 United States gallons per minute for one day equals 0.442 acre-foot.
1,000,000 United States gallons per day equals 1.55 second-feet.
1,000,000 United States gallons equals 3.07 acre-feet.
1,000,000 cubic feet equals 22.95 acre-feet.
1 acre-foot equals 325,850 gallons.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0.0737 second-foot per year.
1 foot equals 0.3048 meter.
1 mile equals 1.60935 kilometers.
1 mile equals 5,280 feet.
1 acre equals 0.4047 hectare.
1 acre equals 43,560 square feet.
1 acre equals 209 feet square, nearly.
1 square mile equals 2.59 square kilometers.
1 cubic foot equals 0.0283 cubic meter.
1 cubic foot of water weighs 62.5 pounds.
1 cubic meter per minute equals 0.5886 second-foot.
1 horsepower equals 550 foot-pounds per second.
1 horsepower equals 76.0 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1⅓ horsepower equal about 1 kilowatt.

To calculate water power quickly: $\frac{\text{Sec.-ft.} \times \text{fall in feet}}{11}$ = net horsepower on water wheel realizing 80 per cent of theoretical power.

EXPLANATION OF DATA.

For each regular current-meter gaging station the following data, so far as available, are given: Description of the station, list of discharge measurements, table of daily gage heights, table of daily discharge, table of monthly and yearly discharge and run-off. For stations located at weirs or dams the gage-height table is omitted.

In addition to statements regarding the location and installation of current-meter stations the descriptions give information in regard to any conditions which may affect the constancy of the relation of gage height to discharge, covering such points as ice, logging, shifting channels, and backwater; also information regarding diversions which decrease the total flow at the measuring section. Statements are also made regarding the accuracy and reliability of the data.

The table of daily gage heights records the daily fluctuations of the surface of the river as found from the mean of the gage readings taken each day, usually in the morning and in the evening. The gage height given in the table represents the elevation of the surface of the water above the zero of the gage. All gage heights affected by the presence of ice in the streams or by backwater from obstructions are published as recorded, with suitable footnotes. The rating table is not applicable for such periods unless the proper corrections to the gage heights are known and applied. Attention is called to the fact that the zero of the gage is placed at an arbitrary datum and has no relation to zero flow or the bottom of the river. In general the zero is located somewhat below the lowest known flow, so that readings of negative values shall not occur.

The discharge measurements and gage heights are the base data from which rating tables, daily discharge tables, and monthly discharge tables are computed.

The rating table gives, either directly or by interpolation, the discharge in second-feet corresponding to every stage of the river recorded during the period for which it is applicable. It is not published in this report, but can be determined from the tables of daily gage heights and daily discharge as follows:

First plot the discharge measurements for the current and earlier years on cross-section paper, with gage heights in feet as ordinates and discharge in second-feet as abscissas. Then tabulate a number of gage heights taken from the daily gage-height table for the complete range of stage given and the corresponding discharges for the days selected from the daily discharge table and plot the values on cross-section paper. The last points plotted will define the rating curve used and will lie among the plotted discharge measurements. After drawing the rating curve a table can be developed by scaling off the discharge in second-feet for each tenth foot of gage height. These values should be so adjusted that the first differences shall always be increasing or constant except for known backwater periods.

The table of daily discharge gives the discharge in second-feet corresponding to the observed gage heights as determined from the rating tables.

In the table of monthly discharge the column headed "Maximum" gives the mean flow, as determined from the rating table, for the day

when the mean gage height was highest. As the gage height is the mean for the day, it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than given in the maximum column. Likewise in the column of "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet for each second during the month. On this the computations for the remaining columns, which are defined on page 11, are based.

The field methods used in the collection of the data presented in this series of reports are described in the introductory sections of Water-Supply Papers 261 to 272, inclusive, "Surface water supply of the United States, 1909."

Plates I and II show the average precipitation and run-off in the United States, as determined from the measurements of stream flow made by the Geological Survey and records of rainfall collected by the Weather Bureau.

Plate III shows typical gaging stations.

Plate IV shows current meters [1] used in the work.

ACCURACY AND RELIABILITY OF FIELD DATA AND COMPARATIVE RESULTS.

The accuracy of stream-flow data depends primarily on the natural conditions at the gaging station and on the methods and care with which the data are collected. Errors of the first group depend on the degree of permanency of channel and of permanency of the relation between discharge and stage.

Errors of the second class are due, first, to errors in observation of stage; second, to errors in measurements of flow; third, to errors due to misinterpretation of stage and flow data.

In order to give engineers and others information regarding the probable accuracy of the computed results, footnotes are added to the daily discharge tables, stating the probable accuracy of the rating tables used, and an accuracy column is inserted in the monthly discharge table. For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined" or "approximate," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The accuracy column in the monthly discharge table does not apply to the maximum or minimum nor to any individual day, but to the monthly mean. It is based on the accuracy of the rating, the

[1] See Hoyt, J. C., and others, Use and care of the current meter as practiced by the United States Geological Survey: Trans. Am. Soc. Civil Eng., vol. 66, 1910, p. 70.

MAP OF UNITED STATES, SHOWING MEAN ANNUAL PRECIPITATION

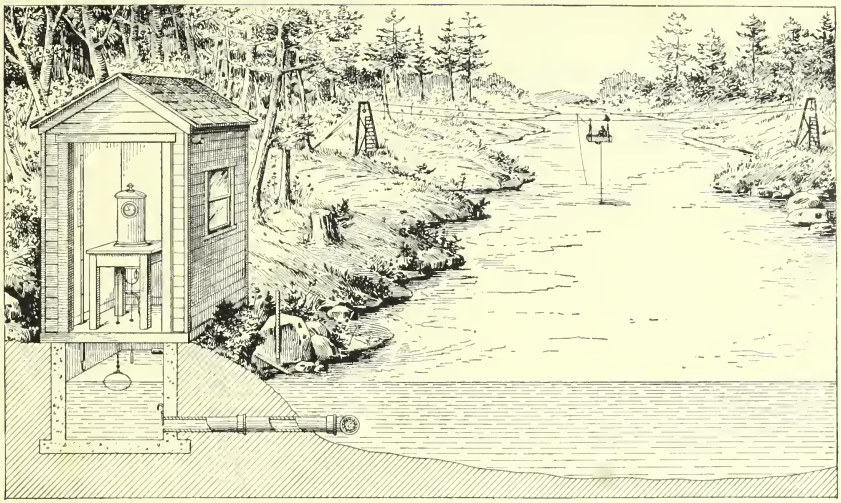
Blue lines and figures indicate average annual precipitation in depth in inches

Prepared by Henry Gannett
mainly from data of the
United States Geological Survey
and United States Weather Bureau

MAP OF UNITED STATES, SHOWING MEAN ANNUAL RUN-OFF

Blue lines and figures indicate average annual run-off in depth in inches

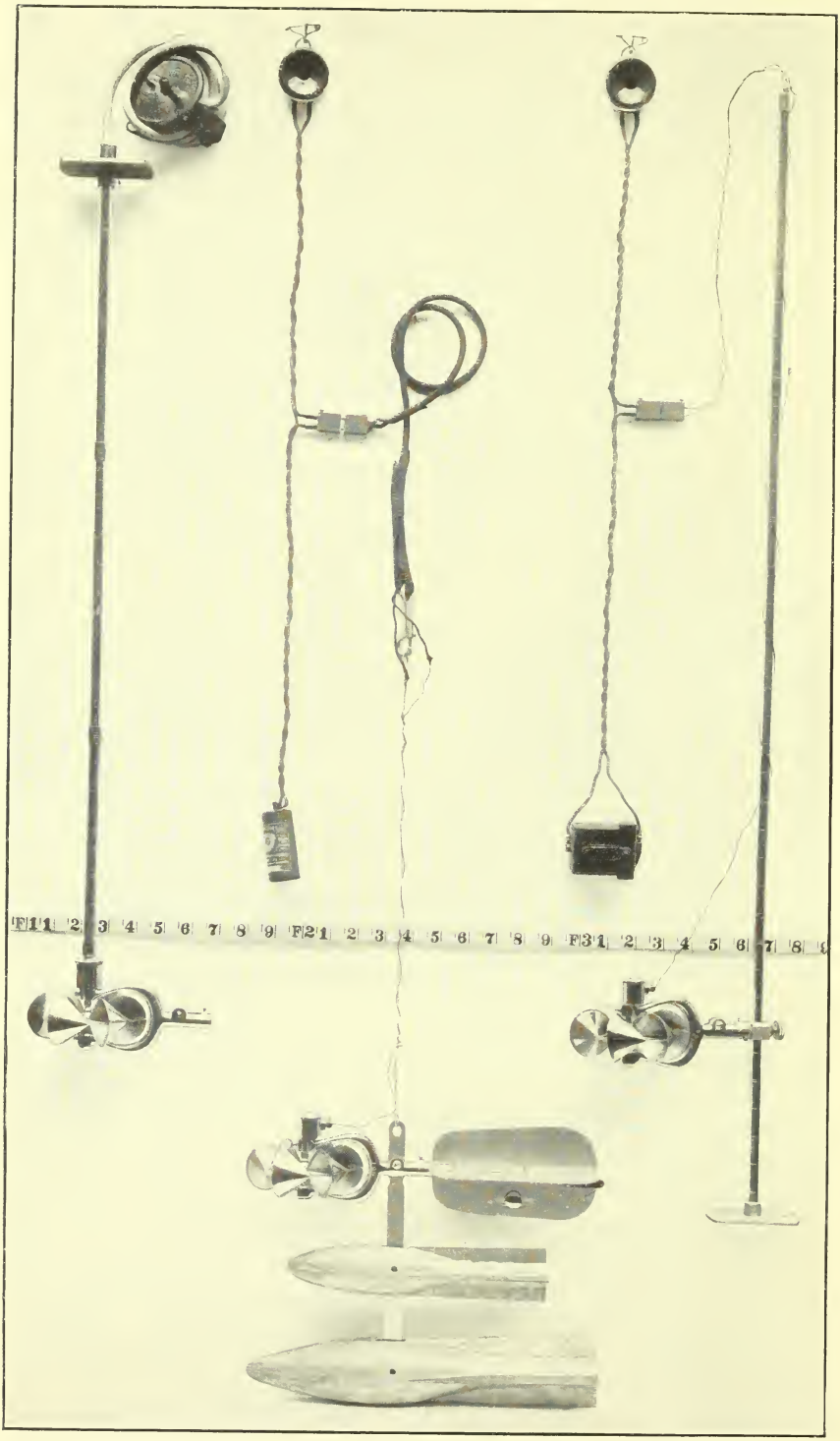
Prepared by Henry Gannett
mainly from data of the
United States Geological Survey



A. CABLE STATION, SHOWING AUTOMATIC GAGE.

B. FOR BRIDGE MEASUREMENT.

TYPICAL GAGING STATIONS.



SMALL PRICE CURRENT METERS.

probable reliability of the observer, and knowledge of local conditions. In this column A indicates that the mean monthly flow is probably accurate within 5 per cent; B, within 10 per cent; C, within 15 per cent; D, within 25 per cent. Special conditions are covered by footnotes.

Even though the monthly means for any station may represent with a high degree of accuracy the quantity of water flowing past the gage, the figures showing discharge per square mile and depth of runoff in inches may be subject to gross errors which result from including in the measured drainage area large noncontributing districts or omitting estimates of water diverted for irrigation or other use, and they should, therefore, be considered as only approximate, particularly for periods of irrigation or of low water. For these errors it is as a rule not feasible to make adequate correction.

In general the base data collected each year by the Survey engineers are published not only to comply with the law but to afford any engineer the means of examining and adjusting to his own needs the results of the computations. The table of monthly discharge is so arranged as to give only a general idea of the flow at the station and should not be used for other than preliminary estimates. The determinations of daily discharge allow more detailed studies of the variation in flow by which the period of deficiency may be determined.

It should be borne in mind that the observations in each succeeding year may be expected to throw new light on data already collected and published, and the engineer who makes use of the figures presented in these papers should verify all ratings and make such adjustments for earlier years as may seem necessary.

COOPERATION AND ACKNOWLEDGMENTS.

CALIFORNIA AND NEVADA.

Assistance has been rendered or records furnished by the following, to whom acknowledgment is due: W. M. Kearney, State engineer of Nevada; the United States Reclamation Service, through D. W. Cole, project engineer; the Office of Experiment Stations, United States Department of Agriculture, through F. L. Peterson, irrigation engineer; the United States Weather Bureau, through H. F. Alps, section director; the United States Forest Service, through W. L. Huber, district engineer; the Stone & Webster Engineering Corporation; the Bureau of the Los Angeles Aqueduct; and P. L. Sherman, jr. This cooperation is separately acknowledged in the station descriptions.

OREGON.

In 1905 the State legislature of Oregon passed an act providing for an annual appropriation of $2,500 for investigation of water resources in the State, and a like amount for the making of topographic maps,

contingent upon an equal allotment by the United States Geological Survey for similar investigations.

In 1911 the legislature passed an act appropriating $20,000 for the purpose of completing the topographic map of the State of Oregon, making more extensive stream measurements and otherwise investigating and determining the water supply of the State. The State engineer represents the State in this cooperation and each year enters into a contract with the Director of the United States Geological Survey.

A statement of the expenditures of both parties under this agreement and the cost of the work is given in Water-Supply Paper 312, which contains the major portion of the results obtained in Oregon.

Special acknowledgment is due to John H. Lewis, State engineer of Oregon.

A number of irrigation companies have cooperated with the Survey in procuring the field data for stations in the Great Basin in Oregon, and some assistance of this character was rendered on practically all these stations during 1911. Acknowledgment is due to the Silver Valley Irrigation Co. for data on the stations on streams entering Harney Valley from the north; the Eastern Oregon Engineering Co., engineers for Wm. Hanley Co., for data on Donner und Blitzen River and its tributaries; Thomas & Walter, on stations near Denio; Warner Lake Irrigation Co., on stations in Warner Valley, and Lakeview Irrigation & Power Co., on stations in Goose Lake valley.

IDAHO.

The work in Idaho has been carried on in cooperation with the State since 1909. The State Land Board provides funds on behalf of the State and the State engineer acts as the agent for the State. In general, contracts were entered into between the Director of the Geological Survey and the State engineer at the beginning of each fiscal year. A statement of the expenditures of both parties and the cost of the work for the year 1911 is given in Water-Supply Paper 312, which contains the major portion of the results obtained in Idaho. Special acknowledgement is due to Mr. A. E. Robinson, State engineer, and to the Telluride Power Co.

UTAH.

The stream-gaging work in Utah during 1911 was carried on by the Geological Survey in cooperation with the State under contracts between the Director of the Survey and the State engineer in the same manner as in other States. Special acknowledgments are due to Mr. Caleb Turner, State engineer, and Mr. G. F. McGonagle, city engineer of Salt Lake City.

DIVISION OF WORK.

The field work in California and Nevada was carried on under the direction of W. B. Clapp and H. D. McGlashan, district engineers, by J. E. Stewart, F. C. Ebert, and James E. Jones, and by G. T. Peekema, a Forest Service hydrographer. The records were compiled and recommendations for estimates made by H. D. McGlashan, district engineer, and R. C. Rice, office engineer. The data were reviewed and computations made under the direction of R. H. Bolster, hydraulic engineer, by E. A. Porter, A. H. Tuttle, H. J. Dean, and M. I. Walters.

The field data in Oregon were collected under the direction of Fred F. Henshaw, district engineer, by R. W. Davenport, John Dubuis, and W. O. Harmon. The records were compiled and recommendations for estimates made under the direction of Fred F. Henshaw, by E. S. Fuller, office engineer. The data were reviewed and computations made under the direction of R. H. Bolster, hydraulic engineer, by E. A. Porter, A. H. Tuttle, and M. I. Walters.

The field data in Idaho were collected under the direction of E. C. La Rue and G. C. Baldwin, district engineers, assisted by O. W. Hartwell, A. B. Purton, Lynn Crandall, J. C. Dort, G. H. Canfield, and H. L. Stoner. The data were reviewed and computations made under the direction of R. H. Bolster, by E. A. Porter, A. H. Tuttle, and M. I. Walters.

The field data in Utah were collected under the direction of E. C. La Rue and G. C. Baldwin, district engineers, by O. W. Hartwell, J. C. Dort, Lynn Crandall, G. H. Canfield, A. B. Purton, and H. L. Stoner.

The computations were made and the completed data prepared for publication under the direction of R. H. Bolster, assisted by E. A. Porter, H. D. Padgett, H. J. Dean, and A. H. Tuttle.

The manuscript was edited by Mrs. B. D. Wood.

GREAT SALT LAKE DRAINAGE BASIN.

BEAR RIVER BASIN.

BEAR RIVER AT DINGLE, IDAHO.

Location.—In sec. 7, T. 14 S., R. 45 E., half a mile southeast of the Dingle railway station and 100 yards south of the railway track, 10 miles above the outlet of Bear Lake.

Records available.—May 9, 1903, to December 31, 1911.

Drainage area.—2,890 square miles.

Gage.—Inclined staff on right bank; datum unchanged since 1903.

Channel.—Bed composed of gravel; shifting; both banks fairly high, and not subject to overflow.

Discharge measurements.—Made from car and cable 30 feet below the gage.

Winter flow.—River is usually frozen over from about December to March, ice reaching a thickness of about 15 inches; ice smooth; anchor or needle ice unknown.

Diversions.—Several canals take water for irrigation above the station. During the spring of 1911 the Telluride Power Co. began to divert water from a point above the station into Mud or North Lake for storage, the water being returned to the river above the Alexander station. A station was established on the power canal in June, 1911 (see p. 19). On June 21, 1911, the Pegleg canal was carrying about 10 second-feet of water, the Dingle canal about 25 second-feet, and the Preston-Montpelier canal about 10 second-feet.

Accuracy.—Open-water records good; fairly accurate estimates of the flow under ice have been made.

Cooperation.—Maintained in cooperation with the State and the Telluride Power Co.

To make the records at Dingle comparable to those obtained previous to the spring of 1911 the water diverted by the Telluride canal must be added to the determined discharge of the river.

Discharge measurements of Bear River at Dingle, Idaho, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 24[a]	Lynn Crandall	4.04	167
May 13	O. W. Hartwell	6.08	1,510
26	Gilkison & Hughes	5.4	1,140
June 2	G. M. Gilkison	5.08	915
21	H. L. Stoner	6.3	1,730
July 22	....do	3.9	340
Aug. 14	....do	3.4	177
Oct. 3	....do	3.49	207

[a] Ice measurement.

Daily gage height, in feet, of Bear River at Dingle, Idaho, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.65	5.00	4.10	6.80	5.20	5.40	4.60	.....	3.00	3.50	.....	.....
2	.....	.....	.....	.....	.....	5.08	.....	3.70	.....	.....	3.50	3.50
3	.....	4.90	.....	7.10	.....	5.00	4.40	.....	3.20	3.49	.....	3.48
4	3.60	5.10	4.25	.....	5.30	5.00	4.40	3.65	.....	3.45	3.45	.....
5	.....	5.15	4.30	7.10	.....	5.00	.....	3.60	3.10	.....	.....	3.48
6	3.70	.....	.....	.....	5.40	.....	4.40	.....	3.10	.....	3.50	.....
7	.....	5.30	4.30	6.20	.....	5.00	.....	3.55	.....	3.45	.....	3.52
8	3.70	.....	.....	.....	.....	.....	4.25	.....	3.10	3.45	3.50	.....
9	.....	5.10	.....	5.70	5.75	5.10	4.15	3.50	.....	.....	.....	3.60
10	.....	.....	4.50	.....	.....	5.60	4.10	3.70	3.10	3.50	3.50	.....
11	.....	.....	.....	.....	6.00	5.60	4.00	.....	.....	.....	.....	3.62
12	3.70	4.70	5.10	5.30	.....	.....	3.90	.....	3.25	3.50	3.50	.....
13	.....	.....	.....	.....	6.08	.....	.....	3.50	.....	.....	3.60	3.70
14	.....	4.55	5.80	5.20	6.15	5.70	4.10	3.40	3.30	.....	.....	.....
15	3.70	4.55	.....	.....	.....	6.00	.....	.....	.....	3.50	.....	3.70
16	.....	.....	5.60	5.00	6.20	.....	4.00	3.30	.....	.....	3.55	.....
17	3.80	4.40	5.40	.....	.....	5.90	.....	.....	3.30	.....	.....	3.75
18	.....	.....	5.10	.....	6.10	.....	4.00	3.20	.....	.....	3.55	.....
19	.....	4.40	.....	4.80	.....	6.10	.....	3.10	.....	3.45	3.60	.....
20	3.75	.....	4.80	.....	6.10	.....	4.00	.....	3.30	.....	4.10	3.80
21	3.80	.....	.....	.....	6.00	6.30	.....	3.10	.....	3.50	.....	.....
22	.....	.....	5.20	4.80	.....	.....	3.90	.....	3.30	3.45	3.90	3.72
23	3.90	4.30	.....	4.90	5.90	5.15	3.85	3.10	.....	.....	.....	.....
24	4.04	.....	5.50	.....	.....	.....	.....	.....	3.30	.....	3.50	3.85
25	.....	4.30	.....	.....	5.30	6.10	3.70	3.00	.....	3.50	5.00	.....
26	3.85	4.30	7.90	4.90	5.40	.....	.....	.....	.....	.....	.....	.....
27	.....	.....	8.20	.....	5.80	5.65	3.80	3.00	3.45	3.50	3.40	3.95
28	3.95	.....	8.00	5.10	.....	.....	.....	.....	.....	.....	.....	.....
29	.....	.....	8.10	5.15	5.80	5.00	3.70	3.00	3.40	.....	3.40	3.90
30	.....	.....	6.80	.....	.....	4.95	.....	.....	3.45	3.50	.....	.....
31	.....	.....	.....	.....	.....	.....	3.70	.....	.....	.....	.....	3.90

NOTE.—Relation of gage height to discharge affected by ice Jan. 1 to about the middle of March and about Dec. 1 to 31. Gage height Nov. 25 not considered correct.

Daily discharge, in second-feet, of Bear River at Dingle, Idaho, for 1911.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	520	185	2,180	886	1,010	606	268	89	207	207
2	498	200	2,320	905	824	562	268	110	206	207
3	475	215	2,470	925	781	517	260	132	204	200
4	560	230	2,470	944	781	522	252	121	194	194
5	590	245	2,470	977	781	522	236	110	194	200
6	625	245	2,040	1,010	781	522	229	110	194	207
7	660	245	1,610	1,090	781	490	222	110	194	207
8	610	268	1,410	1,160	810	459	214	110	194	207
9	560	291	1,210	1,240	840	420	207	110	200	207
10	503	315	1,120	1,340	1,150	400	268	110	207	207
11	446	347	1,030	1,440	1,150	360	248	127	207	207
12	390	380	944	1,480	1,170	319	228	144	207	207
13	360	412	915	1,510	1,170	364	207	150	207	236
14	330	445	886	1,560	1,220	408	180	155	207	231
15	330	477	831	1,580	1,450	388	168	155	207	227
16	302	510	776	1,610	1,410	367	155	155	204	222
17	275	542	742	1,560	1,370	369	144	155	201	222
18	275	575	708	1,520	1,460	371	132	155	198	222
19	275	607	674	1,520	1,540	373	110	155	194	236
20	268	639	674	1,520	1,630	375	110	155	200	420
21	260	748	674	1,440	1,720	357	110	155	207	380
22	252	857	674	1,400	1,300	340	110	155	194	340
23	245	954	724	1,360	874	322	110	155	198	296
24	245	1,050	724	1,150	1,210	295	100	155	202	252
25	245	2,180	724	944	1,550	268	89	168	207	207
26	245	3,310	724	1,010	1,380	286	89	181	207	194
27	225	3,650	777	1,290	1,210	303	89	194	207	180
28	205	3,430	830	1,290	1,010	286	89	187	207	180
29	.....	3,540	857	1,290	808	268	89	180	207	180
30	.....	2,180	872	1,200	781	268	89	194	207	189
31	.....	2,180	.....	1,110	.....	268	89	.....	207	.....

NOTE.—Daily discharge determined as follows: Feb. 1 to Mar. 10 from ice curve based on measurement made Jan. 24; Mar. 11 to 19, discharge gradually increased to allow for effect of melting of ice; Mar. 20 to 27, indirect method for shifting channels used; Mar. 28 to May 13, from fairly accurate curve; May 14 to July 21, by indirect method for shifting channels; July 22 to Nov. 30, from a well-defined rating curve. Discharge interpolated for days for which gage heights are missing except Nov. 21, which was estimated. Note the effect of diversion of water into Bear Lake inlet canal from May 24 to July 18. The discharge of the canal has not been added to the above values. (See p. 20.)

Monthly discharge of Bear River at Dingle, Idaho, for 1911.

[Drainage area, 2,890 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	.....	.....	183	0.063	0.07	11,300	D
February	.....	.....	385	.133	.14	21,400	C.
March	3,650	.....	1,010	.349	.40	62,100	B.
April	2,470	674	1,170	.405	.45	69,600	A.
May	1,610	886	1,270	.453	.52	78,100	B.
June	1,720	781	1,130	.481	.54	67,200	B.
July	606	268	386	.164	.19	23,700	B.
August	268	89	166	.057	.07	10,200	A.
September	194	89	145	.050	.06	8,630	B.
October	207	194	202	.070	.08	12,400	A.
November	.....	80	229	.079	.09	13,600	A.
December	.....	.....	200	.069	.08	12,300	C.
The year	3,650	.....	540	.198	2.69	391,000	

NOTE.—The determinations of discharge per square mile and run-off depth in inches include the diversion above station into Bear Lake inlet canal. All other columns do not include this diversion, and hence, to determine the available water above the diversion, the discharge in table on page 20 must be added.

Discharge Jan. 1 to 31 and Dec. 1 to 31 estimated, because of ice, from climatologic records, discharge of Bear River at Preston, and measurement Jan. 24, 1911.

BEAR (MUD) LAKE INLET CANAL AT DINGLE, IDAHO.

Location.—About three-fourths of a mile south of Dingle, Idaho, and about 2½ miles below the intake of the canal, in sec. 13, T. 14 S., R. 44 E.

Records available.—June 21 to December 31, 1911.

Gage.—Vertical staff about one-fourth of a mile above the point where the canal crosses the road leading south from Dingle.

Channel.—Shifting; the section narrows at the footplank from which discharge measurements are made to half the width of the canal, the narrow section being about 100 feet long. Both banks are high.

Discharge measurements.—Made from a foot plank 3 feet upstream from a small flume across the ditch about 75 feet below the gage.

Cooperation.—Station maintained in cooperation with the State of Idaho and the Telluride Power Co.

The records at this station will indicate the amount of water diverted by the Telluride Power Co. from Bear River for storage in the branch of Bear Lake known as Mud Lake. The amount of water thus diverted should be added to the discharge of the Bear at Dingle to make the records for that station comparable with those made previous to 1911.

Discharge measurements of Bear Lake inlet canal near Dingle, Idaho, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
May 27	Telluride Power Co	.....	280
June 21	H. L. Stoner	5.0	339
July 5	Telluride Power Co	4.40	262
22	H. L. Stoner	2.5	[a] 3

[a] Estimated.

Daily gage height, in feet, and discharge, in second-feet, of Bear Lake inlet canal near Dingle, Idaho, for 1911.

[R. S. Hughes, observer.]

Day.	May.		June.		July.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	4.6	250	4.5	230
2	.....	.....	4.6	250	4.5	230
3	.....	.....	5.2	405	4.5	230
4	.....	.....	5.2	405	4.5	230
5	.....	.....	5.2	405	4.5	230
6	.....	.....	5.2	405	4.4	209
7	.....	.....	5.2	405	4.4	209
8	.....	.....	5.2	405	4.3	189
9	.....	.....	5.2	405	4.2	170
10	.....	.....	4.6	250	4.2	170
11	.....	.....	.0	0	4.2	170
12	.....	.....	.0	0	4.1	152
13	.....	.....	.0	0	3.7	92
14	.....	.....	.0	0	3.2	38
15	.....	.....	.0	0	3.2	38
16	.....	.....	.0	0	3.1	31
17	.....	.....	.0	0	3.1	31
18	.....	.....	5.1	348	3.1	31
19	.....	.....	5.1	348	.....	3
20	.....	.....	5.1	348	.....	3

Daily gage height, in feet, and discharge, in second-feet, of Bear Lake inlet canal near Dingle, Idaho, for 1911—Continued.

Day.	May.		June.		July.	
	Gage height.	Dis. charge.	Gage height.	Dis-charge.	Gage height.	Dis-charge.
21			5.0	340		3
22			4.9	317		3
23			5.1	363		
24	4.1	150	5.0	340		
25	4.1	150	4.9	317		
26	4.8	310	4.9	317		
27	.0	0	4.9	317		
28	.0	0	4.9	317		
29	.0	0	4.9	317		
30	4.1	150	4.6	251		
31	5.2	405				

NOTE.—Gage-height records May 24 to June 20 derived by comparison between United States Geological Survey and Telluride Power Co.'s gages; they are probably liable to some error. Gage heights June 21 to July 18 read from the United States Geological Survey gage. Water turned out of the canal July 18, although, as shown by the discharge measurement July 22, there was some seepage discharge subsequent to July 18. The canal was not in operation in 1911 prior to May 24 or subsequent to July 18.

Daily discharge determined from a rating curve not well defined. Discharge July 19 to 22 estimated. There may also have been a few second-feet discharge subsequent to July 22, but the assumption has been made that the discharge was zero after July 22.

Monthly discharge of Bear Lake inlet canal near Dingle, Idaho, for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
May	405	0	37.6	2,310	C.
June	405	0	261	15,500	B.
July	230	0	86.8	5,340	B.

NOTE.—To determine the total discharge of Bear River above Bear Lake inlet canal add the above determination to the discharge at the Dingle gaging station, p 19.

BEAR RIVER AT ALEXANDER, IDAHO.

Location.—About half a mile upstream from the post office at Alexander, Idaho, in secs. 17 and 18, T. 9 S., R. 41 E., 6 miles above the Telluride Power Co.'s plant near Grace, Idaho, and 4 miles above the intake of the Last Chance canal; it is 30 miles below the point where the outlet of Bear Lake flows into Bear River.

Records available.—March 27 to December 31, 1911.

Drainage area.—Not measured.

Gages.—Gage No. 1 is an inclined staff near the house of C. B. Wilson on the right bank about half a mile from the railroad station at Alexander. Gage No. 2 is about 1,000 feet downstream from gage No. 1 on the right bank and has been read in conjunction with gage No. 1 since November 15, 1911.

Channel.—Stream bed composed of fine gravel and sand; moss grows at the measuring section during the summer and fall and causes backwater at gage No. 1.

Discharge measurements.—Made from a cable and car near gage No. 1.

Winter flow.—Ice present during winter months.

Accuracy.—Records fair.

Cooperation.—Maintained in cooperation with Telluride Power Co. and State of Idaho.

Discharge measurements of Bear River at Alexander, Idaho, for 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 19	J. C. Dort	4.44	1,410
19	....do	4.44	1,380
May 13	O. W. Hartwell	5.06	2,080
27	Telluride Power Co	4.9	2,050
June 8	A. B. Purton	4.61	1,490
22	H. L. Stoner	4.95	1,850
July 21[a]	....do	3.75	612
Aug. 15[a]	....do	3.70	509
Sept. 12[a]	O. W. Hartwell	3.66	539
Oct. 4[a]	H. L. Stoner	3.90	687
30[a]	Lynn Crandall	3.55	466

[a] Moss in channel.

Daily gage height, in feet, of Bear River at Alexander, Idaho, for 1911.

[Charles B. Wilson, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	7.18	4.75	4.90	4.75	3.75	3.60	3.85	3.60	3.32
2	.....	6.82	4.80	4.85	4.62	3.75	3.60	3.85	3.60	3.30
3	.....	6.55	4.80	4.78	4.50	3.75	3.60	3.85	3.60	3.35
4	.....	6.50	4.80	4.70	4.42	3.75	3.65	3.85	3.60	3.52
5	.....	6.45	4.80	4.65	4.30	3.75	3.65	3.85	3.60	3.55
6	.....	6.40	4.80	4.65	4.25	3.75	3.65	3.85	3.60	3.50
7	.....	6.25	4.85	4.65	4.20	3.75	3.70	3.85	3.60	3.50
8	.....	6.05	4.88	4.65	4.15	3.75	3.70	3.82	3.60	4.38
9	.....	5.85	4.95	4.65	4.15	3.75	3.70	3.80	3.60	4.40
10	.....	5.65	4.95	4.60	4.08	3.75	3.75	3.80	3.60	4.40
11	.....	5.38	5.00	4.65	4.00	3.75	3.75	3.85	3.50	4.45
12	.....	5.15	5.02	4.75	4.00	3.75	3.75	3.85	3.50	4.38
13	.....	4.95	5.08	4.92	4.00	3.75	3.75	3.85	3.50	4.39
14	.....	4.78	5.12	5.02	3.95	3.75	3.75	3.85	3.50	4.30
15	.....	4.72	5.15	5.20	3.95	3.70	3.75	3.90	3.85	4.60
16	.....	4.68	5.20	5.15	3.90	3.70	3.75	3.90	4.20	4.35
17	.....	4.60	5.20	5.10	3.90	3.70	3.75	3.90	4.20	4.40
18	.....	4.60	5.20	5.10	3.85	3.70	3.75	3.90	3.90	4.30
19	.....	4.58	5.20	5.05	3.85	3.65	3.75	3.90	3.30	4.38
20	.....	4.52	5.20	5.00	3.80	3.65	3.75	3.90	3.30	4.90
21	.....	4.60	5.20	4.95	3.75	3.65	3.75	3.90	3.30	4.95
22	.....	4.55	5.20	4.95	3.75	3.65	3.80	3.90	3.10	4.92
23	.....	4.50	5.15	5.00	3.75	3.65	3.80	3.85	3.22	4.90
24	.....	4.50	5.15	4.95	3.75	3.65	3.80	3.85	3.30	4.90
25	.....	4.50	5.20	4.95	3.75	3.65	3.80	3.85	3.30	4.80
26	.....	4.50	5.12	5.00	3.75	3.65	3.80	3.80	3.20	4.80
27	5.00	4.55	4.90	4.95	3.75	3.65	3.80	3.70	3.20	4.85
28	5.00	4.60	4.85	4.90	3.75	3.65	3.80	3.65	3.20	5.90
29	6.15	4.65	4.82	4.90	3.75	3.60	3.85	3.60	3.30	5.90
30	6.75	4.70	4.90	4.82	3.75	3.60	3.85	3.60	3.32	5.92
31	7.25	.....	4.90	.....	3.75	3.60	.....	3.60	.....	5.92

NOTE.—Relation of gage height to discharge affected by growth of moss in channel from about the 1st of July to Nov. 10, and by ice at gage Nov. 15 to Dec. 31. All gage heights referred to gage No. 1.

Daily discharge, in second-feet, of Bear River at Alexander, Idaho, for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	4,650	1,740	1,860	1,630	596	506	660	506
2	.....	4,200	1,790	1,800	1,480	596	506	660	506
3	.....	3,860	1,790	1,760	1,410	596	506	660	506
4	.....	3,800	1,790	1,650	1,340	596	536	660	506
5	.....	3,730	1,790	1,560	1,270	596	536	660	506
6	.....	3,670	1,790	1,560	1,200	596	536	660	506
7	.....	3,490	1,840	1,550	1,130	596	565	660	506
8	.....	3,250	1,880	1,540	1,060	596	565	640	506
9	.....	3,610	1,960	1,540	980	596	565	627	506
10	.....	2,770	1,960	1,480	900	596	596	627	506
11	.....	2,450	2,010	1,540	830	596	596	660	450
12	.....	2,180	2,030	1,640	830	596	596	660	450
13	.....	1,960	2,100	1,830	830	596	596	660	450
14	.....	1,770	2,110	1,940	760	596	596	660	450
15	.....	1,700	2,150	2,150	760	565	596	692	.....
16	.....	1,660	2,200	2,090	710	565	596	692	.....
17	.....	1,580	2,200	2,040	710	565	596	692	.....
18	.....	1,580	2,200	2,040	670	565	596	692	.....
19	.....	1,550	2,200	1,980	670	536	596	692	.....
20	.....	1,490	2,200	1,920	640	536	596	692	.....
21	.....	1,580	2,200	1,860	596	536	596	692	.....
22	.....	1,520	2,200	1,860	596	536	627	692	.....
23	.....	1,470	2,150	1,920	596	536	627	660	.....
24	.....	1,470	2,150	1,850	596	536	627	660	.....
25	.....	1,470	2,200	1,850	596	536	627	660	.....
26	.....	1,470	2,100	1,900	596	536	627	627	.....
27	2,010	1,520	1,850	1,840	596	536	627	565	.....
28	2,010	1,580	1,800	1,800	596	536	627	536	.....
29	3,370	1,630	1,780	1,800	596	506	660	506	.....
30	4,110	1,680	1,850	1,700	596	506	660	506	.....
31	4,740	.....	1,850	.....	596	506	.....	506	.....

NOTE.—Discharge determined from three rating curves which are only fairly well defined and are applicable as follows: Mar. 27–May 13, June 8 to 22, July 21 to Nov. 14. Discharge May 14, June 7, and June 23 to July 20 computed by indirect method for shifting channels.

Monthly discharge of Bear River at Alexander, Idaho, for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 27-31	4,740	2,010	3,250	32,300	B.
April	4,650	1,470	2,320	138,000	B.
May	2,200	1,740	2,000	123,000	B.
June	2,150	1,480	1,800	107,000	B.
July	1,630	596	851	52,300	B.
August	596	506	564	34,700	B.
September	660	506	589	35,000	B.
October	692	506	642	39,500	B.
November	506	.....	442	26,300	D.
December	.....	.....	500	30,700	D.
The period	.....	.....	.....	619,000	

NOTE.—Discharge estimated on account of ice Nov. 15 to Dec. 31. Mean discharge Nov. 15-31, 400 second-feet.

BEAR RIVER NEAR PRESTON, IDAHO.

Location.—In sec. 9, T. 15 S., R. 39 E., 100 yards below Battle Creek bridge, about half a mile above the mouth of Battle Creek, and about 4½ miles northwest of Preston.

Records available.—October 11, 1889, to December 31, 1911.

Drainage area.—4,500 square miles.

Gage.—Inclined staff on right bank at O. M. Seamons's barn. This gage was installed April 3, 1909, to replace the old one 200 feet above, on the left bank. Both gages read the same on this date at 3.3 feet and the datum of new gage has remained unchanged.

Channel.—Bed of stream composed of clay and gravel; fairly permanent except during flood stages; water about 2.5 deep during low stages and does not overflow banks at any stage.

Discharge measurements.—Made from a cable and car about 300 feet below the bridge.

Winter flow.—The river seldom freezes over at the station but the relation between gage height and discharge is at times slightly affected by the presence of slush ice.

Diversions.—Several ditches take water for irrigation above the station. The Last Chance canal, which takes out about 4 miles below the Alexander station, was carrying 270 second-feet of water May 25, 1911 (measurement by Telluride Power Co.'s engineer). The West Cache canal, which takes out several miles above the station, had a measured flow of 26 second-feet July 14, 1911, and 5 second-feet August 15, 1911. Water to be used in power development only is diverted by the Telluride Power Co. near Grace, Idaho, at a point about 6 miles below the Alexander station; this water is returned to the river.

Cooperation.—Maintained in cooperation with the State of Idaho.

The records derived from observations at this station show practically the amount of water passing from Idaho into Utah and will be of value in the final adjudication of water rights.

Discharge measurements of Bear River near Preston, Idaho, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Feb. 4	G. H. Canfield	2.85	1,430
May 28	J. C. Dort	3.32	2,210
July 14	....do	1.90	589
Aug. 15	Lynn Crandall	1.70	457
26	H. L. Stoner	1.60	396

Daily gage height, in feet, of Bear River near Preston, Idaho, for 1911.

[O. M. Seamons, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.10	4.60	2.20	4.95	3.40	3.22	2.98	1.80	1.80	2.18	2.00	2.29
2	1.65	4.60	2.20	5.02	3.40	3.20	2.90	1.70	1.80	2.20	2.00	2.22
3	1.85	4.28	2.20	4.85	3.40	3.20	2.82	1.70	1.80	2.30	2.00	2.18
4	1.90	2.90	2.28	4.70	3.42	3.20	2.72	1.70	1.75	2.30	2.00	2.15
5	2.25	2.90	2.35	4.60	3.45	3.20	2.62	1.70	1.70	2.30	2.00	2.10
6	2.18	2.80	2.60	4.55	3.50	3.20	2.52	1.70	1.75	2.25	2.00	2.10
7	2.10	2.78	2.50	4.50	3.50	3.25	2.42	1.70	1.80	2.25	2.00	2.10
8	2.05	2.75	3.20	4.45	3.52	3.22	2.32	1.70	1.85	2.25	2.12	2.05
9	2.10	2.65	2.70	4.35	3.58	3.15	2.22	1.72	1.78	2.25	2.10	2.08
10	2.10	2.65	2.75	4.25	3.60	3.02	2.18	1.75	1.75	2.30	2.10	2.08
11	2.10	2.68	2.95	4.05	3.58	2.90	2.08	1.70	1.75	2.30	2.10	2.08
12	2.08	2.68	2.60	3.85	3.55	2.90	1.98	1.70	1.80	2.30	1.90	2.01
13	2.10	2.62	2.45	3.65	3.60	3.00	1.90	1.70	1.85	2.30	1.95	2.10
14	2.10	2.58	2.45	3.45	3.62	3.10	1.90	1.70	1.90	2.30	2.10	2.08
15	2.10	2.52	2.52	3.40	3.68	3.22	1.92	1.70	1.95	2.30	2.25	2.08
16	2.10	2.35	2.72	3.35	3.75	3.28	1.95	3.70	1.95	2.30	2.22	2.10
17	2.10	2.10	2.80	3.30	3.72	3.20	2.00	1.65	1.95	2.25	2.22	2.12
18	2.05	2.35	2.90	3.25	3.70	3.20	1.95	1.65	1.95	2.25	2.25	2.15
19	2.10	2.50	2.95	3.20	3.70	3.20	1.95	1.65	1.95	2.25	2.22	2.00
20	2.08	2.32	3.02	3.15	3.65	3.20	1.90	1.65	1.95	2.25	2.20	2.25

Daily gage height, in feet, of Bear River near Preston, Idaho, for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
21	2.10	2.20	3.15	3.18	3.60	3.10	1.82	1.65	1.98	2.25	2.18	2.22
22	1.85	2.20	3.32	3.20	3.52	3.10	1.80	1.60	2.02	2.25	2.15	2.12
23	1.85	2.22	3.45	3.20	3.50	3.12	1.75	1.60	2.10	2.20	2.10	2.02
24	2.00	2.20	3.55	3.20	3.48	3.20	1.72	1.60	2.02	2.15	2.10	2.08
25	3.90	2.25	3.65	3.15	3.45	3.15	1.70	1.60	2.00	2.05	2.07	2.08
26	3.10	2.30	3.52	3.18	3.45	3.10	1.65	1.65	2.00	2.00	2.20	1.65
27	2.45	2.15	3.50	3.30	3.40	3.10	1.70	1.70	2.00	2.00	2.00	2.20
28	2.20	2.15	3.55	3.32	3.35	3.05	1.70	1.70	2.00	2.00	1.91	2.19
29	2.30	.....	3.75	3.35	3.30	3.05	1.80	1.70	2.00	2.00	1.89	2.25
30	5.15	.....	4.20	3.35	3.28	3.00	1.80	1.70	2.02	2.00	2.11	2.25
31	5.65	.....	4.58	.....	3.25	.....	1.85	1.75	.....	2.00	.....	2.18

Daily discharge, in second-feet, of Bear River near Preston, Idaho, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	710	4,000	800	4,750	2,310	2,060	1,730	520	520	827	670	930
2	410	4,000	800	4,900	2,310	2,030	1,630	455	520	845	670	864
3	530	3,490	800	4,640	2,310	2,030	1,530	455	520	940	670	827
4	560	1,550	872	4,390	2,340	2,030	1,400	455	488	940	670	800
5	845	1,550	935	4,220	2,380	2,030	1,280	455	455	940	670	755
6	782	1,430	1,200	4,140	2,460	2,030	1,170	455	488	892	670	755
7	710	1,410	1,090	4,050	2,460	2,100	1,060	455	520	892	670	755
8	670	1,370	1,930	3,960	2,490	2,060	960	455	555	892	773	712
9	710	1,260	1,310	3,800	2,580	1,960	864	468	507	892	755	738
10	710	1,260	1,370	3,640	2,610	1,790	827	488	488	940	755	738
11	710	1,290	1,610	3,320	2,580	1,630	738	455	488	940	755	738
12	694	1,290	1,200	3,000	2,540	1,630	654	455	520	940	590	678
13	710	1,220	1,040	2,680	2,610	1,760	590	455	555	940	630	755
14	710	1,180	1,040	2,380	2,640	1,890	590	455	590	940	755	738
15	710	1,110	1,110	2,310	2,730	2,060	606	455	630	940	892	738
16	710	935	1,330	2,240	2,840	2,140	630	455	630	940	864	755
17	710	710	1,430	2,170	2,790	2,030	670	425	630	892	864	773
18	670	935	1,550	2,100	2,760	2,030	630	425	630	892	892	800
19	710	1,090	1,610	2,030	2,760	2,030	630	425	630	892	864	670
20	694	908	1,700	1,960	2,680	2,030	590	425	630	892	845	892
21	710	800	1,860	2,000	2,610	1,890	534	425	654	892	827	864
22	530	800	2,090	2,030	2,490	1,890	520	395	687	892	800	773
23	530	818	2,270	2,030	2,460	1,920	488	395	755	845	755	687
24	630	800	2,410	2,030	2,430	2,030	468	395	687	800	755	738
25	2,920	845	2,550	1,960	2,380	1,960	455	395	670	712	730	738
26	1,800	890	2,370	2,000	2,380	1,890	425	425	670	670	845	792
27	1,040	755	2,340	2,170	2,310	1,890	455	455	670	670	670	845
28	800	755	2,410	2,200	2,240	1,820	455	455	670	670	598	836
29	890	.....	2,700	2,240	2,170	1,820	520	455	670	670	583	892
30	4,990	.....	3,430	2,240	2,140	1,760	520	455	687	670	764	892
31	5,890	.....	4,080	.....	2,100	.....	555	488	.....	670	.....	827

NOTE.—Daily discharge determined from well-defined rating curve applicable as follows: Jan. 1 to Mar. 29 and Apr. 3 to Dec. 31, 1911. Discharge Mar. 30 to Apr. 2 determined by the indirect method for shifting channels. Discharge Dec. 26 interpolated; gage height on that date believed to be in error.

Monthly discharge of Bear River near Preston, Idaho, for 1911.

[Drainage area, 4,500 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	5,890	410	1,100	0.247	0.28	68,200	A.
February	4,000	710	1,370	.304	.32	76,100	A.
March	4,080	800	1,720	.382	.44	106,000	A.
April	4,900	1,960	2,920	.649	.72	174,000	A.
May	2,840	2,100	2,480	.551	.64	152,000	A.
June	2,140	1,630	1,940	.431	.48	115,000	A.
July	1,730	425	780	.173	.20	48,000	A.
August	520	395	446	.099	.11	27,400	A.
September	755	455	594	.132	.15	35,300	A.
October	940	670	851	.189	.22	52,300	A.
November	892	583	742	.165	.18	44,200	A.
December	930	670	784	.174	.20	48,200	A.
The year	5,890	395	1,310	.291	3.94	947,000	

BEAR RIVER NEAR COLLINSTON, UTAH.

Location.—About one-fourth mile below the power plant of the Utah-Idaho Sugar Co., at the Wheelon railroad siding, about 4 miles north of Collinston, in the NW. ¼ sec. 26, T. 13 N., R. 2 W., Salt Lake base and meridian.

Records available.—July 1, 1889, to December 31, 1911.

Drainage area.—6,000 square miles.

Gage.—The original gage was a vertical iron bar driven into the river bed and supported at the top by timbers projecting from the bank. In February, 1905, an inclined gage of 6 by 6 fir was established near the iron gage and at the same datum.

Channel.—Gravel and sand which shift occasionally during high water.

Discharge measurements.—Made from cable and car.

Winter flow.—Some ice forms along the banks near the station but this does not affect the open-channel rating.

Diversions.—There is a low diversion dam at the upper end of the Bear River canyon about 2 miles above the station, where two canals head, diverting the water out on both sides of the canyon and by the station. Either canal can be used to furnish water to the power plant, below which point the water is carried south and west for irrigation. The left canal carries approximately 100 second-feet; the right canal carries about 550 second-feet below the power plant.

Regulation.—Manipulation of gates at the dam 2 miles above the station may cause variations in flow.

Accuracy.—The measurements made at this station plot very consistently and the discharge record is considered reliable.

Cooperation.—Maintained in cooperation with the State of Utah.

The records derived from observations at this station show practically the total amount of unappropriated water below all diversions.

Discharge measurements of Bear River near Collinston, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet..	*Sec-feet.*
Feb. 3	G. H. Canfield	6.54	7,860
July 15	J. C. Dort	1.20	413
Aug. 14	L. Crandall	1.14	363

Daily gage height, in feet, of Bear River near Collinston, Utah, for 1911.

[R. A. Johnston, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.2	6.3	2.4	4.7	4.2	4.1	.....	1.0	1.1	1.9	2.3	1.9
2	2.2	7.0	2.3	4.7	4.1	4.0	2.7	1.0	1.1	1.9	2.2	1.9
3	2.2	6.6	2.3	4.7	4.1	3.9	2.7	1.0	1.1	2.0	2.2	2.0
4	2.2	5.6	2.5	4.9	4.2	3.8	2.5	1.0	1.2	2.0	2.2	2.1
5	2.2	4.6	2.6	5.2	4.2	3.6	2.4	1.0	1.2	2.1	2.2	2.1
6	2.3	4.0	2.9	5.3	4.2	3.6	2.2	1.1	1.3	2.2	2.2	2.2
7	2.3	3.5	3.0	5.4	4.2	3.5	1.9	1.1	1.3	2.3	2.3	2.2
8	2.3	3.0	3.0	5.2	4.2	3.4	1.8	1.1	1.4	2.3	2.3	2.3
9	2.3	2.7	3.4	5.1	4.3	3.3	1.7	1.1	1.4	2.3	2.3	2.3
10	2.4	2.4	3.9	5.0	4.5	3.3	1.7	1.1	1.4	2.3	2.3	2.3
11	2.4	2.4	4.2	4.9	4.6	3.3	1.5	1.1	1.4	2.3	2.3	2.2
12	2.4	2.9	4.1	4.7	4.6	3.3	1.4	1.1	1.4	2.4	2.3	2.2
13	2.4	3.2	4.0	4.4	4.6	3.3	1.2	1.1	1.4	2.4	2.2	2.2
14	2.4	3.0	3.9	4.2	4.6	3.6	1.2	1.15	1.4	2.4	2.2	2.2
15	2.4	2.8	3.7	3.8	4.5	3.7	1.1	1.1	1.4	2.5	2.3	2.2
16	2.4	2.4	3.6	3.7	4.5	3.5	1.1	1.1	1.4	2.4	2.3	2.2
17	2.4	2.2	3.3	3.7	4.4	3.4	1.7	1.1	1.4	2.3	2.3	2.3
18	2.3	2.2	3.3	3.5	4.2	3.6	1.7	1.1	1.4	2.3	2.4	2.2
19	2.4	2.2	3.4	3.5	4.0	3.8	1.7	1.1	1.5	2.3	2.3	2.2
20	2.4	2.3	3.7	3.6	4.0	3.8	1.6	1.1	1.6	2.3	2.3	2.1
21	2.4	2.4	3.7	3.6	4.1	3.6	1.5	1.1	1.7	2.3	2.3	2.2
22	2.3	2.4	3.8	3.5	4.0	3.4	1.4	1.1	1.8	2.3	2.3	2.2
23	2.2	2.5	3.9	3.5	4.1	3.3	1.4	1.1	1.8	2.3	2.3	2.3
24	1.9	2.5	4.0	3.5	4.2	3.2	1.3	1.1	1.9	2.3	2.2	2.1
25	2.4	2.5	4.1	3.6	4.1	3.2	1.2	1.1	1.9	2.3	2.2	2.1
26	4.2	2.5	4.1	3.7	4.0	3.1	1.0	1.1	1.9	2.3	2.2	2.2
27	4.7	2.5	4.2	3.8	4.6	3.1	1.0	1.1	1.9	2.3	2.2	2.2
28	3.6	2.5	4.1	4.0	4.6	3.0	1.0	1.1	1.9	2.3	2.2	2.2
29	3.0	.....	4.1	4.2	4.1	3.0	1.0	1.1	1.9	2.3	2.1	2.2
30	3.9	.....	4.2	4.3	4.1	3.0	1.0	1.1	1.9	2.2	2.0	2.2
31	5.0	.....	4.4	.....	4.0	.....	1.0	1.1	.....	2.2	.....	2.2

NOTE.—Observer records water just a little over gage Feb. 2, 1911. Gage heights estimated (no record) July 28 to Sept. 7, with the exception of Aug. 14.

Daily discharge, in second-feet, of Bear River near Collinston, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,250	7,300	1,500	4,620	3,830	3,680	2,020	275	340	995	1,390	995
2	1,250	8,800	1,390	4,620	3,680	3,530	1,840	275	340	995	1,290	995
3	1,250	8,000	1,390	4,620	3,680	3,380	1,840	275	340	1,090	1,290	1,090
4	1,250	6,110	1,610	4,940	3,830	3,240	1,610	275	410	1,090	1,290	1,190
5	1,250	4,460	1,720	5,430	3,830	2,960	1,500	275	410	1,190	1,290	1,190
6	1,350	3,530	2,080	5,600	3,830	2,960	1,290	340	485	1,290	1,290	1,290
7	1,350	2,830	2,200	5,770	3,830	2,830	995	340	485	1,390	1,390	1,290
8	1,350	2,200	2,200	5,430	3,830	2,700	905	340	565	1,390	1,390	1,390
9	1,350	1,840	2,700	5,260	3,980	2,570	815	340	565	1,390	1,390	1,390
10	1,450	1,500	3,380	5,100	4,300	2,570	815	340	565	1,390	1,390	1,390
11	1,450	1,500	3,830	4,940	4,460	2,570	645	340	565	1,390	1,390	1,290
12	1,450	2,080	3,680	4,620	4,460	2,570	565	340	565	1,500	1,390	1,290
13	1,450	2,440	3,530	4,140	4,460	2,570	410	340	565	1,500	1,290	1,290
14	1,450	2,200	3,380	3,830	4,460	2,960	410	375	565	1,500	1,290	1,290
15	1,450	1,960	3,100	3,240	4,300	3,100	340	340	565	1,610	1,390	1,290
16	1,450	1,500	2,960	3,100	4,300	2,830	340	340	565	1,500	1,390	1,290
17	1,450	1,290	2,570	3,100	4,140	2,700	815	340	565	1,390	1,390	1,390
18	1,350	1,290	2,570	2,830	3,830	2,960	815	340	565	1,390	1,500	1,290
19	1,450	1,290	2,700	2,830	3,530	3,240	815	340	645	1,390	1,390	1,290
20	1,450	1,390	3,100	2,960	3,530	3,240	730	340	730	1,390	1,390	1,190
21	1,450	1,500	3,100	2,960	3,680	2,960	645	340	815	1,390	1,390	1,290
22	1,350	1,500	3,240	2,830	3,530	2,700	565	340	905	1,390	1,390	2,190
23	1,250	1,610	3,380	2,830	3,680	2,570	565	340	905	1,390	1,390	1,390
24	960	1,610	3,530	2,830	3,830	2,440	485	340	995	1,390	1,290	1,190
25	1,450	1,610	3,680	2,960	3,680	2,440	410	340	995	1,390	1,290	1,190
26	3,750	1,610	3,680	3,100	3,530	2,320	275	340	995	1,390	1,290	1,290
27	4,510	1,610	3,830	3,240	4,460	2,320	275	340	995	1,390	1,290	1,290
28	2,890	1,610	3,680	3,530	4,460	2,200	275	340	995	1,390	1,290	1,290
29	2,120	.....	3,680	3,830	3,680	2,200	275	340	995	1,390	1,190	1,290
30	3,300	.....	3,830	3,980	3,680	2,200	275	340	995	1,290	1,090	1,290
31	5,010	.....	4,140	.....	3,530	.....	275	340	.....	1,290	.....	1,290

NOTE.—Discharge determined from two rating curves fairly well defined, one applicable Mar. 19, 1910, to Feb. 2, 1911, the other Feb. 3 to Dec. 31, 1911. Discharge interpolated July 1, 1911.

Monthly discharge of Bear River near Collinston, Utah, for 1911.

[Drainage area, 6,000 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	5,010	960	1,790	0.298	0.34	110,000	B.
February	8,800	1,290	2,720	.453	.47	151,000	A.
March	4,140	1,390	2,950	.492	.57	181,000	A.
April	5,770	2,830	3,970	.662	.74	236,000	A.
May	4,460	3,530	3,930	.655	.76	242,000	A.
June	3,680	2,200	2,780	.463	.52	165,000	A.
July	2,020	275	769	.128	.15	47,300	B.
August	375	275	331	.055	.06	20,400	C.
September	995	340	666	.111	.12	39,600	B.
October	1,610	995	1,350	.225	.26	83,000	A.
November	1,500	1,090	1,340	.223	.25	79,700	A.
December	1,390	995	1,260	.210	.24	77,500	B.
The year	8,800	275	1,980	.330	4.48	1,430,000	

GEORGETOWN CREEK NEAR GEORGETOWN, IDAHO.

Location.—In sec. 4, T. 11 S., R. 44 E., 50 feet below the power plant of the Bear Lake Power Co., 3 miles northeast of Georgetown, Idaho, which is 1 mile from Georgetown station on the Oregon Short Line Railroad.

Records available.—October 20, 1911, to December 31, 1911.

Drainage area.—22 square miles.

Gage.—Staff, nailed to alder stumps on right bank.

Channel.—In general rocky and clean, but lower end of gage rests on a deposit of sand which might shift slightly.

Discharge measurements.—Made by wading at all except extremely high stages.

Winter flow.—Probably not affected by freezing, as water is warm.

Diversion.—Water is probably diverted above the station at certain times of the year.

Cooperation.—Maintained in cooperation with the United States Forest Service.

The following discharge measurement was made by J. P. Martin:
October 23, 1911: Gage height, 0.99 foot; discharge, 27.4 second-feet.

Daily gage height, in feet, of Georgetown Creek near Georgetown, Idaho, for 1911.

Oct 23	0.99
Nov. 27	1.02
Dec. 5	1.00
13	1.00
23	1.00
30	.98

LOGAN RIVER NEAR LOGAN, UTAH.

Location.—Two miles east of Logan, Utah, 50 feet below highway bridge at mouth of canyon, and about 800 feet below Telluride Power Co.'s plant, in the center of the NW. ¼, sec. 36, T. 12 N., R. 1 E., Salt Lake base and meridian.

Records available.—June 1, 1896, to July 18, 1903; April 13, 1904, to December 31, 1911.

Drainage area.—218 square miles.

Gage.—Sloping staff gage on right bank.
Channel.—More or less shifting, especially during high water.
Discharge measurements.—Made from car and cable.
Winter flow.—No ice forms at this station.
Diversion.—The Logan, Hyde Park, and Smithfield canal diverts water above the Telluride Power Co.'s plant. This canal carries about 100 second-feet during the irrigation season.
Accuracy.—Fair.
Cooperation.—Maintained in cooperation with Telluride Power Co.

The following discharge measurement was made by G. M. Gilkison, engineer for the Telluride Power Co.:

October 7, 1911: Gage height, 2 feet; discharge, 168 second-feet.

Daily gage height, in feet, of Logan River near Logan, Utah, for 1911.

[Telluride Power Co., observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.5	1.85	2.45	2.8	3.65	2.95	2.2	2.0	2.05	1.95	1.8
2	.....	2.55	1.85	2.5	2.85	3.75	2.9	2.2	2.0	2.05	1.95	1.8
3	.....	2.2	1.85	2.6	2.85	3.7	2.9	2.2	2.0	2.05	1.95	1.8
4	.....	2.2	1.9	2.6	2.95	3.8	2.85	2.2	2.0	2.05	1.95	1.8
5	.....	2.15	1.85	2.6	3.05	3.9	2.85	2.2	2.0	2.05	2.0	1.8
6	.....	2.1	1.85	2.5	3.1	3.8	2.85	2.2	2.0	2.0	1.95	1.8
7	.....	2.1	1.85	2.5	3.35	3.8	2.85	2.2	2.0	2.05	1.95	1.8
8	.....	1.9	1.9	2.5	3.35	3.8	2.8	2.15	1.95	2.0	1.95	1.8
9	.....	1.95	1.95	2.45	3.45	3.8	2.75	2.15	1.95	2.0	1.95	1.8
10	.....	2.0	1.9	2.4	3.45	3.7	2.7	2.1	1.95	2.0	1.95	1.8
11	.....	2.0	1.9	2.4	3.25	3.6	2.65	2.1	1.95	2.0	1.85	1.8
12	.....	2.0	1.95	2.4	3.1	3.65	2.6	2.1	1.95	2.0	1.85	1.8
13	.....	2.0	1.95	2.35	3.1	3.7	2.6	2.05	1.95	2.0	1.85	1.8
14	.....	2.0	1.95	2.35	3.2	3.75	2.6	2.05	1.95	2.0	1.9	1.8
15	.....	1.9	1.95	2.35	3.35	3.75	2.55	2.05	1.95	2.0	1.95	1.8
16	.....	1.85	1.95	2.35	3.35	3.7	2.5	2.05	1.95	2.0	1.95	1.8
17	.....	1.8	2.0	2.35	3.35	3.6	2.5	2.05	1.95	2.0	1.95	1.8
18	.....	1.8	2.0	2.35	3.45	3.55	2.5	2.05	1.95	2.0	1.95	1.8
19	.....	1.9	2.0	2.35	3.45	3.5	2.45	2.05	1.95	2.0	1.9	1.8
20	.....	1.9	2.05	2.3	3.5	3.5	2.45	2.05	1.95	2.0	1.95	1.82
21	.....	1.85	2.1	2.3	3.5	3.5	2.4	2.05	1.95	2.0	1.95	1.82
22	.....	1.85	2.2	2.3	3.5	3.5	2.4	2.05	1.95	2.0	1.95	1.8
23	.....	1.85	2.2	2.3	3.6	3.45	2.4	2.05	1.95	2.0	1.85	1.82
24	1.9	1.85	2.15	2.35	3.6	3.4	2.35	2.05	1.95	2.0	1.9	1.8
25	2.05	1.85	2.2	2.35	3.6	3.3	2.35	2.0	2.05	2.0	1.9	1.8
26	1.95	1.85	2.2	2.5	3.45	3.25	2.3	2.0	2.0	2.0	1.9	1.81
27	1.9	1.85	2.15	2.85	3.35	3.1	2.3	2.0	1.95	2.0	1.85	1.82
28	1.8	1.9	2.15	2.85	3.35	3.05	2.25	2.0	1.95	1.95	1.85	1.83
29	1.9	.....	2.15	2.8	3.4	3.0	2.25	2.0	1.95	1.95	1.85	1.81
30	2.3	.....	2.25	2.8	3.4	3.0	2.25	2.0	2.0	1 95	1.8	1.8
31	2.95	.....	2.4	.....	3.5	.....	2.2	2.0	.....	1.95	.....	1.8

Daily discharge, in second-feet, of Logan River near Logan, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	385	108	356	585	1,280	720	246	168	186	152	105
2	.....	418	108	385	622	1,360	680	246	168	186	152	105
3	.....	230	108	450	622	1,320	680	246	168	186	152	105
4	.....	230	122	450	700	1,410	640	246	168	186	152	105
5	.....	210	108	450	780	1,500	640	246	168	186	168	105
6	.....	190	108	385	820	1,440	640	246	168	168	152	105
7	.....	190	108	385	1,020	1,440	640	246	168	186	152	105
8	.....	122	122	385	1,020	1,440	600	226	152	168	152	105
9	.....	138	138	356	1,110	1,440	560	226	152	168	152	105
10	.....	154	122	327	1,110	1,350	530	205	152	168	152	105

Daily discharge, in second-feet, of Logan River near Logan, Utah, for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
11	.....	154	122	327	940	1,260	500	205	152	168	120	105
12	.....	154	138	327	820	1,300	460	205	152	168	120	105
13	.....	154	138	301	820	1,350	460	186	152	168	120	105
14	.....	154	158	301	900	1,400	460	186	152	168	135	105
15	.....	122	138	301	1,020	1,400	430	186	152	168	152	105
16	.....	108	138	301	1,020	1,350	400	186	152	168	152	105
17	.....	94	154	301	1,020	1,260	400	186	152	168	152	105
18	.....	94	154	301	1,110	1,220	400	186	152	168	152	105
19	.....	122	154	301	1,110	1,170	372	186	152	168	135	105
20	.....	122	172	275	1,150	1,170	372	186	152	168	152	111
21	.....	108	190	275	1,150	1,170	343	186	152	168	152	111
22	.....	108	230	275	1,150	1,170	343	186	152	168	152	105
23	.....	108	230	275	1,240	1,120	343	186	152	168	120	111
24	122	108	210	301	1,240	1,080	318	186	152	168	135	105
25	172	108	230	301	1,240	1,000	318	168	186	168	135	105
26	138	108	230	385	1,110	960	292	168	168	168	135	108
27	122	108	210	622	1,020	840	292	168	152	168	120	111
28	94	122	210	622	1,020	800	269	168	152	152	120	114
29	122	.....	210	585	1,060	760	269	168	152	152	120	108
30	275	.....	252	585	1,060	760	269	168	168	152	105	105
31	700	.....	327	.....	1,150	.....	246	168	.....	152	.....	105

NOTE.—Daily discharge determined from two fairly well defined rating curves applicable Jan. 1 to June 5 and June 6 to Dec. 31.

Monthly discharge of Logan River near Logan, Utah, for 1911.

[Drainage area, 218 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	.....	.....	123	0.514	0.59	7,560	C.
February	418	94	158	.725	.75	8,780	C.
March	327	108	165	.757	.87	10,100	C.
April	622	275	373	1.71	1.91	22,200	C.
May	1,240	585	992	4.55	5.25	61,000	C.
June	1,500	760	1,220	5.60	6.25	72,600	C.
July	720	246	448	2.05	2.36	27,500	B.
August	246	168	200	.917	1.06	12,300	B.
September	186	152	158	.725	.81	9,400	A.
October	186	152	169	.775	.89	10,400	A.
November	168	105	141	.647	.72	8,390	B.
December	114	105	106	.486	.56	6,520	B.
The year	1,500	94	355	1.63	22.03	257,000	

NOTE.—The water diverted past the station by the Logan, Hyde Park, and Smithfield canal is not included in the above totals. Discharge Jan. 1–23 estimated 90 second-feet.

LITTLE MALAD RIVER NEAR MALAD, IDAHO.

Location.—At Schwartz ranch, about three-fourths of a mile below the Kerns & Torey reservoir site, about 2½ miles above the Elkhorn reservoir site, and about 14 miles northwest of Malad, in sec. 36, T. 12 S., R. 34 E.

Records available.—August 2, 1911, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Inclined staff about 175 feet above a 3-foot fall in the river.

Channel.—Clay and hard pan; probably permanent; right bank may overflow at extremely high stages.

Discharge measurements.—Made by wading about 150 feet above the gage.
Winter flow.—Affected by ice.
Accuracy.—Good.
Cooperation.—Station maintained in cooperation with the State of Idaho.

The records at this point will indicate the amount of water available for storage at one of several proposed reservoir sites.

Discharge measurements of Little Malad River near Malad, Idaho, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Aug. 2	G. C. Baldwin	3.00	13.8
Nov. 12	H. L. Stoner	3.00	13.0

Daily gage height, in feet, of Little Malad River near Malad, Idaho, for 1911.

[Nephi W. Lewis, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	3.0	.....	3.0	3.0	16	3.0	3.0	3.0	3.05	3.0
2	.....	3.0	3.0	3.0	3.0	17	3.0	.....	3.0	3.05	.....
3	.....	.....	3.0	3.0	.....	18	3.0	3.0	3.0	3.0	3.0
4	.....	3.0	3.0	3.0	3.0	19	3.0	3.0	3.0	.....	3.0
5	.....	3.0	3.0	.....	3.0	20	.....	3.0	3.0	3.0	3.0
6	.....	3.0	3.0	3.0	3.0	21	3.0	3.0	3.0	3.0	3.0
7	3.0	3.0	3.0	3.0	3.0	22	3.0	3.0	.....	3.0	3.0
8	3.0	3.0	.....	3.05	3.0	23	3.0	3.0	3.0	3.0	3.0
9	3.0	3.0	3.0	3.05	3.0	24	3.0	.....	3.0	3.0	.....
10	3.0	.....	3.1	3.1	.....	25	3.0	3.0	3.0	3.0	3.0
11	3.0	3.0	3.0	3.1	3.0	26	3.0	3.0	3.0	.....	3.0
12	3.0	3.0	3.0	.....	3.0	27	.....	3.0	3.0	3.0	3.0
13	.....	3.0	3.0	3.05	3.0	28	3.0	3.0	3.0	3.0	3.1
14	3.0	3.0	3.0	3.1	3.0	29	3.0	3.0	.....	3.0	3.05
15	3.0	3.0	.....	3.05	3.0	30	3.0	3.0	3.0	3.0	3.2
						31	3.0	.....	3.0	.....	.....

NOTE.—Relation of gage height to discharge affected by ice about Dec. 28–31.

Daily discharge, in second-feet, of Little Malad River near Malad, Idaho, for 1911.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	13	13	13	13	16	13	13	13	16	13
2	.....	13	13	13	13	17	13	13	13	16	13
3	.....	13	13	13	13	18	13	13	13	13	13
4	.....	13	13	13	13	19	13	13	13	13	13
5	.....	13	13	13	13	20	13	13	13	13	13
6	.....	13	13	13	13	21	13	13	13	13	13
7	13	13	13	13	13	22	13	13	13	13	13
8	13	13	13	16	13	23	13	13	13	13	13
9	13	13	13	16	13	24	13	13	13	13	13
10	13	13	18	18	13	25	13	13	13	13	13
11	13	13	13	18	13	26	13	13	13	13	13
12	13	13	13	17	13	27	13	13	13	13	13
13	13	13	13	16	13	28	13	13	13	13	13
14	13	13	13	18	13	29	13	13	13	13	13
15	13	13	13	16	13	30	13	13	13	13	13
						31	13	.....	13	.....	13

NOTE.—Daily discharge determined from a well-defined rating curve based on measurements made during 1911 and 1912. Discharge estimated Dec. 28–31, on account of ice.

Monthly discharge of Little Malad River near Malad, Idaho, for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
August 7-31	13	13	13.0	645	A.
September	13	13	13.0	774	A.
October	18	13	13.2	812	A.
November	18	13	14.2	845	A.
December	13	13	13.0	799	A.

BOXELDER CREEK AT BRIGHAM UTAH.

Location.—At the highway bridge three blocks west and about five blocks north of the courthouse at Brigham, Utah, in the NW. ¼ NW. ¼ sec. 13, T. 9 N., R. 2 W., Salt Lake base and meridian.

Records available.—May 20, 1909, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened on the downstream corner of the right abutment of the bridge. On February 24, 1910, the datum of the gage was lowered 2 feet.

Channel.—Shifting; bed composed of sand.

Discharge measurements.—Made from the bridge or by wading.

Winter flow.—Ice forms at this station.

Diversions.—During the summer months the entire flow of Boxelder Creek is used for irrigation and no water flows by the station.

Regulation.—Flow affected by artificial control above the station.

Accuracy.—Low because of shifting channel.

Cooperation.—Station maintained in cooperation with the State of Utah.

Discharge measurements of Boxelder Creek at Brigham, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Feb. 5[a]	G. H. Canfield	4.10	10.7
Mar. 13[a]	do	4.28	16.9
Nov. 4[b]	J. C. Dort	4.20	6.0
Dec. 12[b]	L. Tanner	4.35	14.2

[a] Wading below section. [b] Wading at section.

Daily gage height, in feet, of Boxelder Creek at Brigham, Utah, for 1911.

[Woodruff Nelson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec..
1	3.4	4.9	4.3	4.8	4.5					4.1	4.2	4.3
2	3.4	5.2	4.4	4.7	4.5					4.2	4.2	4.3
3	3.4	5.0	4.4	4.8	4.5					4.1	4.2	4.3
4	3.4	4.7	4.4	4.8	4.5					4.1	4.2	4.4
5	3.4	4.1	4.4	4.7	4.5					4.1	4.2	4.4
6	3.5	4.2	4.4	4.7	4.6					4.1	4.2	4.4
7	3.5	4.2	4.6	4.6	4.7					4.1	4.3	4.4
8	3.4	4.3	4.6	4.6	4.7					4.1	4.3	4.5
9	3.4	4.4	4.5	4.6	4.6					4.1	4.3	4.5
10	3.3	4.5	4.6	4.6	4.5					4.1	4.3	4.5
11	3.3	4.3	4.7	4.7	4.1					4.1	4.3	4.4
12	3.4	4.3	4.6	4.5	4.1					4.1	4.3	4.4
13	3.4	4.3	4.6	4.5	3.4					4.1	4.3	4.4
14	3.4	4.3	4.5	4.4	3.6					4.1	4.3	4.3
15	3.5	4.3	4.5	4.4	3.7					4.1	4.3	4.3

Daily gage height, in feet, of Boxelder Creek at Brigham, Utah, for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
16	3.5	4.2	4.6	4.4	3.9	.....	.....	.....	.....	4.1	4.4	4.3
17	3.5	4.2	4.6	4.6	3.9	.....	.....	.....	.....	4.1	4.3	4.3
18	3.4	4.2	4.7	4.6	4.0	.....	.....	.....	.....	4.1	4.4	4.3
19	3.4	4.3	4.7	4.6	4.0	.....	.....	.....	.....	4.1	4.3	4.3
20	3.5	4.3	4.7	4.5	4.0	.....	.....	.....	.....	4.1	4.3	4.3
21	3.5	4.2	4.6	4.4	4.0	.....	.....	.....	.....	4.2	4.3	4.2
22	3.5	4.2	4.5	4.4	.....	.....	.....	.....	.....	4.2	4.4	4.2
23	3.5	4.2	4.6	4.5	.....	.....	.....	.....	.....	4.2	4.3	4.2
24	3.6	4.2	4.6	4.6	.....	.....	.....	.....	.....	4.2	4.3	4.3
25	3.6	4.2	4.7	4.6	.....	.....	.....	.....	.....	4.2	4.3	4.3
26	3.9	4.2	4.6	4.6	.....	.....	.....	.....	.....	4.2	4.3	4.3
27	4.0	4.2	4.6	4.7	.....	.....	.....	.....	.....	4.2	4.3	4.3
28	4.5	4.3	4.6	4.9	.....	.....	.....	.....	.....	4.2	4.3	4.3
29	4.5	.....	4.7	4.8	.....	.....	.....	.....	.....	4.2	4.3	4.3
30	4.6	.....	4.8	4.8	.....	.....	.....	.....	.....	4.2	4.3	4.3
31	4.8	.....	4.7	.....	.....	.....	.....	.....	.....	4.2	.....	4.3

NOTE.—Creek dry about May 22 to Sept. 30. Probably no material effect from ice.

Daily discharge, in second-feet, of Boxelder Creek at Brigham, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	20	159	18	48	28	.....	.....	.....	.....	5	7	10
2	20	82	23	41	28	.....	.....	.....	.....	7	7	10
3	20	64	23	48	28	.....	.....	.....	.....	5	7	10
4	20	41	23	48	28	.....	.....	.....	.....	5	7	13
5	20	10	23	41	28	.....	.....	.....	.....	5	7	13
6	25	13	23	41	34	.....	.....	.....	.....	5	7	13
7	25	13	34	34	41	.....	.....	.....	.....	5	10	13
8	20	18	34	34	41	.....	.....	.....	.....	5	10	18
9	20	23	28	34	34	.....	.....	.....	.....	5	10	18
10	15	28	34	34	28	.....	.....	.....	.....	5	10	18
11	15	18	41	41	10	.....	.....	.....	.....	5	10	13
12	20	18	34	28	10	.....	.....	.....	.....	5	10	13
13	20	18	34	28	0	.....	.....	.....	.....	5	10	13
14	20	18	28	23	1	.....	.....	.....	.....	5	10	10
15	25	18	28	23	2	.....	.....	.....	.....	5	10	10
16	25	13	34	23	5	.....	.....	.....	.....	5	13	10
17	25	13	34	34	5	.....	.....	.....	.....	5	10	10
18	20	13	41	34	7	.....	.....	.....	.....	5	13	10
19	20	18	41	34	7	.....	.....	.....	.....	5	10	10
20	25	18	41	28	7	.....	.....	.....	.....	5	10	10
21	25	13	34	23	7	.....	.....	.....	.....	7	10	7
22	25	13	28	23	.....	.....	.....	.....	.....	7	13	7
23	25	13	34	28	.....	.....	.....	.....	.....	7	10	7
24	30	13	34	34	.....	.....	.....	.....	.....	7	10	10
25	30	13	41	34	.....	.....	.....	.....	.....	7	10	10
26	54	13	34	34	.....	.....	.....	.....	.....	7	10	10
27	63	13	34	41	.....	.....	.....	.....	.....	7	10	10
28	113	18	34	56	.....	.....	.....	.....	.....	7	10	10
29	113	.....	41	48	.....	.....	.....	.....	.....	7	10	10
30	124	.....	48	48	.....	.....	.....	.....	.....	7	10	10
31	147	.....	41	.....	.....	.....	.....	.....	.....	7	.....	10

NOTE.—Discharge determined from three poorly defined rating curves applicable Jan. 1 to Feb 1, Feb. 2 to May 21, and Oct. 1 to Dec. 31.

Monthly discharge of Boxelder Creek at Brigham, Utah, for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	147	15	37.7	2,320	D.
February	159	10	25.9	1,440	D.
March	48	18	33.0	2,030	D.
April	56	23	35.6	2,120	D.
May	41	0	12.2	750	D.
October	7	5	5.8	360	D.
November	13	7	9.7	580	D.
December	18	7	11.2	689	D.
The year	159	0	14.2	10,300	

NOTE.—Creek dry from May 22 to Sept. 30, 1911.

WEBER RIVER BASIN.

WEBER RIVER NEAR OAKLEY, UTAH.

Location.—Near the mouth of the canyon, 3 miles above Oakley post office, below the South Fork of Weber River, and above Kamas Creek, in the SW. ¼ NE. ¼ sec. 15, T. 1 S., R. 6 E., Salt Lake base and meridian.

Records available.—October 22, 1904, to December 31, 1911.

Drainage area.—163 square miles.

Gage.—An inclined iron rod firmly bolted to a limestone ridge at the left end of the cable; datum unchanged since installation.

Channel.—One channel at all stages; fairly permanent but may shift during extreme high water.

Discharge measurements.—Made from car and cable during medium to high water; and by wading just below the cable during low water.

Winter flow.—The river freezes across at the station and gage heights are also affected by slush and anchor ice; nevertheless fairly reliable estimates of the discharge for the winter period can be made by interpolating between days on which open water is known to have existed, as the winter discharge varies little.

Diversions.—No water is diverted above the station but several canals head just below the station, diverting water for the Kamas prairie region.

Regulation.—None.

Accuracy.—The records for the open-water periods are very good.

Cooperation.—Maintained in cooperation with State of Utah.

Discharge measurements of Weber River near Oakley, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 12[a]	G. H. Canfield	3.92	60.0
Aug. 22[a]	J. C. Dort	4.07	87.8

[a] Wading at section.

Daily gage height, in feet, of Weber River near Oakley, Utah, for 1911.

[John Franson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	4.2	.....	4.2	4.8	6.1	5.3	4.25	.....	4.1	.....	.....
2	.....	.....	4.6	4.25	4.8	6.1	5.3	4.25	3.95	4.25	4.0	5.1
3	.....	.....	.....	4.25	4.9	6.3	5.2	4.2	3.95	4.20	4.0	5.1
4	5.1	.....	.....	4.3	5.1	6.7	5.1	4.2	3.95	4.15	4.0	4.8
5	.....	.....	.....	4.4	5.3	6.8	5.05	4.2	3.95	4.10	4.0	4.4
6	.....	.....	.....	4.3	5.6	7.0	5.0	4.2	3.95	4.10	4.0	4.6
7	.....	.....	3.95	4.3	5.6	6.9	4.95	4.2	3.95	4.05	4.0	4.6
8	.....	.....	.....	4.3	5.8	7.0	4.9	4.15	.....	4.05	.....	.....
9	.....	4.1	.....	4.3	5.7	7.0	4.85	4.1	3.95	4.05	4.05	4.4
10	.....	.....	3.95	4.4	5.7	6.3	4.75	4.1	3.95	4.05	4.2	4.4
11	.....	.....	.....	4.3	5.6	6.5	4.7	4.1	3.95	4.05	4.2	4.5
12	5.4	.....	.....	4.3	5.6	7.0	4.7	.....	3.95	4.05	4.3	4.4
13	.....	.....	.....	4.25	5.7	7.3	4.65	4.05	3.95	4.05	4.3	4.6
14	.....	.....	3.95	4.35	5.7	7.2	4.6	4.05	3.95	4.05	4.2	.....
15	.....	4.3	.....	.....	5.8	7.0	4.6	4.05	3.95	4.05	.....	4.6
16	.....	.....	.....	4.2	5.7	6.8	4.6	4.05	.....	4.05	4.15	4.8
17	.....	.....	3.95	4.2	5.7	6.6	4.6	4.05	3.95	4.05	4.0	4.8
18	4.4	.....	.....	4.25	5.6	6.4	4.55	4.05	3.95	.....	4.0	5.0
19	.....	.....	3.95	4.3	5.5	6.4	4.5	4.05	3.95	4.05	4.0	.....
20	.....	.....	.....	4.35	5.4	6.5	4.5	4.05	3.95	4.0	4.0	5.0
21	.....	.....	.....	4.35	5.3	6.4	4.5	4.05	.....	4.0	4.0	5.3
22	.....	5.1	4.0	4.35	5.4	6.3	4.9	4.05	3.9	4.0	4.1	5.3
23	.....	.....	.....	4.4	5.6	6.2	4.6	4.0	3.9	4.0	4.1	5.7
24	.....	.....	4.05	4.55	5.7	6.1	4.5	4.0	3.95	.....	4.15	5.8
25	4.0	.....	.....	4.7	5.8	5.7	4.5	4.0	3.95	4.0	4.2	5.6
26	.....	.....	4.1	4.8	5.9	5.7	4.5	4.0	3.95	4.0	4.3	5.6
27	.....	.....	.....	4.9	5.7	5.6	4.45	3.95	4.0	4.0	4.3	5.4
28	.....	.....	4.0	4.9	5.5	5.6	4.0	3.95	4.0	4.0	4.5	5.0
29	.....	.....	.....	4.9	5.5	5.5	4.35	3.95	4.0	4.0	4.7	4.9
30	.....	.....	4.05	4.9	5.6	5.4	4.3	3.95	4.1	4.0	5.0	4.7
31	.....	.....	4.1	.....	5.9	.....	4.3	3.95	.....	4.0	.....	4.7

NOTE.—Relation of gage height to discharge probably affected by ice Jan. 1 to about Mar. 6, Nov. 10 to Nov. 16, and Nov. 24 to Dec. 31.

Daily discharge, in second-feet, of Weber River near Oakley, Utah, for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	120	320	1,090	568	133	64	96	74
2	.....	133	320	1,090	568	133	64	133	74
3	.....	133	364	1,250	514	120	64	120	74
4	.....	146	462	1,600	462	120	64	108	74
5	.....	174	568	1,690	437	120	64	96	74
6	.....	146	747	1,890	412	120	64	96	74
7	64	146	747	1,790	388	120	64	85	74
8	64	146	878	1,890	364	108	64	85	80
9	64	146	811	1,890	342	96	64	85	85
10	64	174	811	1,250	299	96	64	85	.....
11	64	146	747	1,420	278	96	64	85	.....
12	64	146	747	1,890	278	90	64	85	.....
13	64	133	811	2,220	259	85	64	85	.....
14	64	160	811	2,100	240	85	64	85	.....
15	64	140	878	1,890	240	85	64	85	.....
16	64	120	811	1,690	210	85	64	85	.....
17	64	120	811	1,510	240	85	64	85	74
18	64	133	747	1,330	222	85	64	85	74
19	64	146	685	1,330	265	85	64	85	74
20	68	160	625	1,420	295	85	64	74	74

Daily discharge, in second-feet, of Weber River near Oakley, Utah, for 1911—Continued.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
21	71	160	568	1,330	205	85	60	74	74
22	74	160	625	1,250	364	85	55	74	96
23	80	174	747	1,170	240	74	55	74	96
24	85	222	811	1,090	205	74	64	74	.....
25	90	278	878	811	205	74	64	74	.....
26	96	320	948	811	205	74	64	74	.....
27	85	364	811	747	190	64	74	74	.....
28	74	364	685	747	74	64	74	74	.....
29	80	364	685	685	160	64	74	74	.....
30	85	364	747	625	146	64	96	74	.....
31	96	.....	948	.....	146	64	.....	74	.....

NOTE.—Daily discharge determined from a fairly well-defined rating curve. Discharge interpolated for days on which gage heights were not recorded. Discharge affected by ice Jan. 1–Mar. 6, Nov. 10–16, and Nov. 24–Dec. 31, 1911.

Monthly discharge of Weber River near Oakley, Utah, for 1911.

[Drainage area, 163 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January[a]	.....	.....	75	0.460	0.53	4,610	D.
February[a]	.....	.....	85	.521	.54	4,720	D.
March	96	60	70.2	.431	.50	4,320	C.
April	364	120	188	1.15	1.28	11,200	B.
May	948	320	715	4.39	5.06	44,000	B.
June	2,220	625	1,380	8.47	9.45	82,100	B.
July	568	74	287	1.76	2.03	17,600	B.
August	133	64	90.9	.558	.64	5,590	A.
September	96	55	65.3	.401	.45	3,890	A.
October	133	74	85.2	.523	.60	5,240	A.
November	96	74	76.5	.469	.52	4,550	C.
December[a]	.....	.....	75	.460	.53	4,610	D.
The year	2,220	.....	266	1.63	22.13	192,000	

[a] Monthly mean estimated.

NOTE.—Estimated daily discharge Mar. 1 to 6, 60 second-feet; Nov. 10 to 16 and Nov. 24 to Dec. 31, 75 second-feet.

WEBER RIVER AT DEVILS SLIDE,[1] UTAH.

Location.—About 1 mile east of the railroad station at Devils Slide, about three-fourths of a mile upstream from the Union Pacific Railroad bridge. Lost Creek enters one-fourth mile above the station and Chalk Creek about 15 miles above. It is in the center of the SW. ¼ sec. 19, T. 4 N., R. 4 E., Salt Lake base and meridian.

Records available.—February 1, 1905, to December 31, 1911.

Drainage area.—1,090 square miles.

Gage.—Inclined staff gage on right bank of the stream. Datum unchanged since installation.

Channel.—Shifts at various periods.

Discharge measurements.—Made from car and cable.

[1] Formerly called Croydon.

Winter flow.—The river does not freeze over at this station, but a little ice often forms along the banks; open-channel rating will apply throughout the year.

Diversions.—Some water is diverted from Weber River for the Kamas Prairie Valley below.

Accuracy.—Fair.

Cooperation.—Maintained in cooperation with State of Utah.

Discharge measurements of Weber River at Devils Slide, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 10	G. H. Canfield	3.04	523
11	....do	4.52	1,670
Aug. 23[a]	J. C. Dort	2.09	77

[a] Wading at section.

Daily gage height, in feet, of Weber River at Devils Slide, Utah, for 1911.

[E. F. Crouch, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.4	5.0	2.5	2.95	3.8	3.7	3.2	2.4	2.1	2.3	2.4	2.4
2	2.4	3.2	2.6	3.05	3.6	3.7	3.0	2.4	2.1	2.3	2.4	2.4
3	2.4	3.0	2.8	3.1	3.6	3.7	3.0	2.4	2.1	2.4	2.4	2.4
4	2.4	3.0	2.8	3.1	3.7	3.8	3.0	2.4	2.1	2.4	2.4	2.4
5	2.4	3.0	3.0	3.15	4.0	4.0	2.9	2.4	2.1	2.4	2.4	2.4
6	2.4	2.9	3.0	3.25	4.4	4.1	2.9	2.4	2.1	2.4	2.4	2.4
7	2.4	2.9	3.0	3.2	4.5	4.5	2.8	2.3	2.1	2.4	2.4	2.4
8	2.4	2.8	3.0	3.1	4.5	4.65	2.7	2.3	2.1	2.4	2.4	2.4
9	2.4	2.7	3.0	3.1	4.5	4.65	2.6	2.3	2.1	2.4	2.4	2.4
10	2.4	2.7	3.0	3.1	4.4	4.65	2.6	2.3	2.1	2.4	2.4	2.4
11	2.4	2.7	4.5	3.1	4.4	4.5	2.5	2.3	2.1	2.4	2.4	2.4
12	2.4	2.7	3.3	3.05	4.2	4.6	2.5	2.3	2.1	2.4	2.4	2.4
13	2.4	2.6	3.1	3.05	4.2	4.75	2.4	2.3	2.1	2.4	2.4	2.4
14	2.4	2.6	2.9	3.0	4.2	4.95	2.4	2.3	2.1	2.4	2.4	2.4
15	2.4	2.5	2.9	3.0	4.2	5.0	2.4	2.3	2.1	2.4	2.4	2.4
16	2.4	2.5	2.75	3.05	4.2	4.8	2.4	2.3	2.1	2.4	2.4	2.4
17	2.4	2.5	3.0	3.05	4.2	4.8	2.4	2.3	2.1	2.4	2.4	2.4
18	2.4	2.5	3.0	3.05	4.2	4.65	2.4	2.3	2.1	2.4	2.4	2.4
19	2.4	2.5	3.0	2.95	4.0	4.65	2.4	2.3	2.1	2.4	2.4	2.4
20	2.4	2.5	3.0	2.95	4.0	4.55	2.4	2.3	2.1	2.4	2.4	2.4
21	2.4	2.5	3.1	2.95	4.0	4.45	2.4	2.3	2.1	2.4	2.4	2.4
22	2.4	2.5	3.1	2.95	3.9	4.35	2.4	2.2	2.1	2.4	2.4	2.4
23	2.4	2.5	3.15	3.05	3.9	4.35	2.4	2.1	2.1	2.4	2.4	2.4
24	2.4	2.5	3.45	3.15	3.8	4.25	2.4	2.1	2.1	2.4	2.4	2.4
25	2.8	2.5	3.3	3.15	3.8	4.1	2.4	2.1	2.1	2.4	2.4	2.4
26	2.9	2.5	3.05	3.25	3.8	3.95	2.4	2.1	2.1	2.4	2.4	2.4
27	2.8	2.5	2.95	3.4	3.8	3.85	2.4	2.1	2.1	2.4	2.4	2.4
28	2.8	2.5	2.95	3.65	3.8	3.65	2.4	2.1	2.2	2.4	2.4	2.4
29	2.7	.....	2.95	3.85	3.7	3.35	2.4	2.1	2.2	2.4	2.4	2.4
30	2.9	.....	2.95	3.9	3.6	3.25	2.4	2.1	2.2	2.4	2.4	2.4
31	5.2	.....	2.95	.....	3.6	.....	2.4	2.1	.....	2.4	.....	2.4

Daily discharge, in second-feet, of Weber River at Devils Slide, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	190	2,070	265	472	1,010	940	495	157	80	129	157	157
2	190	610	305	528	870	940	395	157	80	129	157	157
3	190	500	395	555	870	940	395	157	80	157	157	157
4	190	500	395	555	940	1,010	395	157	80	157	157	157
5	190	500	500	582	1,170	1,170	350	157	80	157	157	157
6	190	445	500	640	1,510	1,250	350	157	80	157	157	157
7	190	445	500	610	1,600	1,600	305	129	80	157	157	157
8	190	395	500	555	1,600	1,740	263	129	80	157	157	157
9	190	350	500	555	1,600	1,740	224	129	80	157	157	157
10	190	350	500	555	1,510	1,740	224	129	80	157	157	157
11	190	350	1,600	555	1,510	1,600	189	129	80	157	157	157
12	190	350	670	528	1,330	1,690	189	129	80	157	157	157
13	190	305	555	528	1,330	1,820	157	129	80	157	157	157
14	190	305	445	500	1,330	2,020	157	129	80	157	157	157
15	190	265	445	500	1,330	2,070	157	129	80	157	157	157
16	190	265	372	528	1,330	1,700	157	129	80	157	157	157
17	190	265	500	528	1,330	1,700	157	129	80	157	157	157
18	190	265	500	528	1,330	1,560	157	129	80	157	157	157
19	190	265	500	472	1,170	1,560	157	129	80	157	157	157
20	190	265	500	472	1,170	1,480	157	129	80	157	157	157
21	190	265	555	472	1,170	1,380	157	129	80	157	157	157
22	190	265	555	472	1,090	1,300	157	103	80	157	157	157
23	190	265	582	528	1,090	1,300	157	80	80	157	157	157
24	190	265	765	582	1,010	1,220	157	80	80	157	157	157
25	350	265	670	582	1,010	1,100	157	80	80	157	157	157
26	400	265	528	640	1,010	985	157	80	80	157	157	157
27	350	265	472	730	1,010	915	157	80	80	157	157	157
28	350	265	472	905	1,010	775	157	80	103	157	157	157
29	305	.....	472	1,050	940	585	157	80	103	157	157	157
30	400	.....	472	1,090	870	525	157	80	103	157	157	157
31	2,270	.....	472	.....	870	.....	157	80	.....	157	.....	157

NOTE.—Discharge determined from three rating curves, only fairly well defined, applicable Jan. 1 to 31, Feb. 1 to June 15, and June 16 to Dec. 31.

Monthly discharge of Weber River at Devils Slide, Utah, for 1911.

[Drainage area 1090 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	2,270	190	290	0.266	0.31	17,800	C.
February	2,070	265	399	.366	.38	22,200	C.
March	1,600	265	531	.487	.56	32,600	C.
April	1,090	472	593	.544	.61	35,300	C.
May	1,600	870	1,190	1.09	1.26	73,200	C.
June	2,070	525	1,350	1.24	1.38	80,300	C.
July	495	157	218	.200	.23	13,400	C.
August	157	80	119	.109	.13	7,320	C.
September	103	80	82.3	.076	.08	4,900	C.
October	157	129	155	.142	.16	9,530	C.
November	157	157	157	.144	.16	9,340	C.
December	157	157	157	.144	.17	9,650	C.
The year	2,270	80	436	.400	5.43	316,000	

WEBER RIVER NEAR PLAIN CITY, UTAH.

Location.—At the county highway bridge about 6 miles above the mouth of Weber River, on the road from Ogden to Plain City and West Weber, in the SW. ¼ SE. ¼ sec. 5, T. 6 N., R. 2 W., about 6 miles below the mouth of Ogden River, 2 miles below the mouth of Mill Creek, and 1 mile below Fourmile Creek.

Records available.—January 1, 1904, to December 31, 1911.

Drainage area.—2,060 square miles.

Gage.—Vertical staff painted on upstream side of center pier of bridge; datum unchanged.

Channel.—Shifts occasionally during extreme floods.

Discharge measurements.—Made from bridge or by wading.

Winter flow.—Very little ice forms at this station but the river has occasionally frozen over in the later part of December or early part of January.

Diversions.—Practically the entire flow of Weber River is used for irrigation during the summer months and in August the discharge of 4 or 5 second-feet is seepage past the dam, which is about 5 miles above the station.

Artificial control.—The operation of the power plants in Weber Canyon above the city of Ogden probably has no effect in controlling the natural flow of the stream.

Accuracy.—Good.

Cooperation.—Maintained in cooperation with the State of Utah.

Discharge measurements of Weber River near Plain City, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 1	G. H. Canfield	17.2	5,670
Mar. 14	do	7.45	1,200
July 31[a]	J. C. Dort	2.37	9.28
Aug. 18[a]	do	2.17	4.80

[a] Wading below station.

Daily gage height, in feet, of Weber River near Plain City, Utah, for 1911.

[W. E. Davies, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.4	17.3	5.3	8.5	10.0	6.8	4.4	2.4	2.2	3.1	4.6	4.6
2	4.8	11.5	5.3	9.0	9.4	7.2	4.0	2.4	2.2	3.3	4.4	4.8
3	5.5	9.8	5.1	9.3	9.4	7.1	3.6	2.4	2.2	3.6	4.5	4.8
4	5.3	8.5	5.4	9.5	9.6	7.2	3.4	2.4	2.2	4.3	4.5	4.5
5	5.4	8.2	5.8	9.3	10.5	7.5	3.0	2.4	2.2	4.3	4.6	4.5
6	5.3	7.8	6.6	10.3	12.0	7.5	2.8	2.4	2.2	4.3	4.6	4.7
7	5.2	7.4	6.8	10.4	12.8	7.8	2.7	2.4	2.2	4.2	4.5	4.5
8	4.8	6.9	7.5	9.2	12.6	7.9	2.7	2.4	2.2	4.2	4.5	4.6
9	4.6	6.5	8.7	9.4	12.7	8.0	2.6	2.4	2.2	4.4	4.7	4.3
10	5.0	6.3	8.3	9.0	12.8	7.9	2.6	2.3	2.2	4.4	4.7	4.6
11	4.9	6.5	11.2	9.2	11.7	7.3	2.5	2.3	2.2	4.5	4.8	4.5
12	4.8	6.6	10.6	9.0	10.6	7.4	2.5	2.3	2.2	4.4	4.6	4.3
13	4.7	6.5	8.5	8.7	10.1	7.7	2.5	2.3	2.3	4.6	4.5	4.1
14	4.7	6.3	7.4	8.4	10.0	8.2	2.5	2.3	2.3	4.6	4.6	4.1
15	4.6	5.9	7.0	8.0	10.0	10.3	2.5	2.3	2.3	4.6	4.6	4.0
16	4.9	5.9	7.4	7.9	10.2	10.9	2.5	2.3	2.3	4.6	4.6	4.3
17	4.7	5.8	7.6	7.8	9.6	10.8	2.4	2.3	2.3	4.6	4.9	4.3
18	5.0	5.6	7.8	7.7	9.1	10.5	2.4	2.2	2.3	4.6	4.8	4.3
19	4.7	5.5	7.9	8.1	8.8	9.8	2.4	2.2	2.3	4.6	4.8	4.5
20	4.9	5.3	7.8	8.0	8.5	9.7	2.4	2.2	2.3	4.5	4.7	4.3
21	4.9	5.3	8.2	8.0	8.3	9.9	2.4	2.2	2.3	4.5	4.8	4.6
22	4.8	5.5	8.4	7.8	7.7	9.6	2.4	2.2	2.3	4.4	4.8	5.7
23	5.5	5.4	8.5	7.6	7.5	8.1	2.4	2.2	2.3	4.4	4.7	5.0
24	5.7	5.2	9.2	7.7	7.5	7.6	2.4	2.2	2.8	4.3	4.5	5.4
25	7.75	5.5	9.6	8.2	7.4	7.1	2.4	2.2	2.8	4.3	4.3	5.8
26	10.4	5.0	8.9	8.6	7.7	6.6	2.4	2.2	2.7	4.4	4.4	5.5
27	7.4	4.9	8.0	9.5	8.5	6.0	2.4	2.2	2.7	4.0	4.5	5.3
28	6.2	5.0	7.8	10.7	8.3	5.3	2.4	2.2	2.7	4.6	4.6	5.3
29	6.0	.....	7.6	11.1	7.7	5.0	2.4	2.2	2.7	4.3	4.5	5.4
30	6.9	.....	7.6	10.9	7.1	4.8	2.4	2.2	2.7	4.5	4.4	5.3
31	16.8	.....	7.9	.....	6.9	.....	2.4	2.2	.....	4.4	.....	5.2

NOTE.—Relation of gage height to discharge affected by ice from about Dec. 16 to 31.

Daily discharge, in second-feet, of Weber River near Plain City, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	348	5,900	564	1,580	2,160	986	348	9	5	104	392	392
2	438	2,770	564	1,770	1,920	1,120	266	9	5	136	348	438
3	616	2,080	512	1,880	1,920	1,080	190	9	5	190	370	438
4	564	1,580	590	1,960	2,000	1,120	154	9	5	326	370	370
5	590	1,470	694	1,880	2,360	1,220	88	9	5	326	392	370
6	564	1,330	926	2,280	2,980	1,220	58	9	5	326	392	414
7	538	1,190	986	2,320	3,320	1,330	44	9	5	306	370	370
8	438	1,020	1,220	1,840	3,230	1,360	44	9	5	306	370	392
9	392	896	1,650	1,920	3,270	1,400	32	9	5	348	414	326
10	486	836	1,510	1,770	3,320	1,360	32	7	5	348	414	392
11	462	896	2,640	1,840	2,850	1,150	15	7	5	370	438	370
12	438	926	2,400	1,770	2,400	1,190	15	7	5	348	392	326
13	414	896	1,580	1,660	2,200	1,290	15	7	7	392	370	286
14	414	836	1,190	1,540	2,160	1,470	15	7	7	392	392	286
15	392	722	1,050	1,400	2,160	2,280	15	7	7	392	392	266
16	462	722	1,190	1,360	2,240	2,520	15	7	7	392	392	.....
17	414	694	1,260	1,330	2,000	2,480	9	7	7	392	462	.....
18	486	642	1,330	1,290	1,800	2,360	9	5	7	392	438	.....
19	414	616	1,360	1,440	1,690	2,080	9	5	7	392	438	.....
20	462	564	1,330	1,400	1,580	2,040	9	5	7	370	414	.....
21	462	564	1,470	1,400	1,510	2,120	9	5	7	370	438	.....
22	438	616	1,540	1,330	1,290	2,000	9	5	7	348	38	.....
23	616	590	1,580	1,260	1,220	1,440	9	5	7	348	414	.....
24	668	538	1,840	1,290	1,220	1,260	9	5	58	326	370	.....
25	1,310	616	2,000	1,470	1,190	1,080	9	5	58	326	326	.....
26	2,320	486	1,730	1,620	1,290	926	9	5	44	348	348	.....
27	1,190	462	1,400	1,960	1,580	750	9	5	44	266	370	.....
28	806	486	1,330	2,440	1,510	564	9	5	44	392	392	.....
29	750	.....	1,260	2,600	1,290	486	9	5	44	326	370	.....
30	1,020	.....	1,260	2,520	1,080	438	9	5	44	370	348	.....
31	5,420	.....	1,360	.....	1,020	.....	9	5	.....	348	.....	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge affected by ice Dec. 16–31, 1911.

Monthly discharge of Weber River near Plain City, Utah, for 1911.

[Drainage area, 2,060 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	5,420	348	785	0.381	0.44	48,300	A.
February	5,900	462	1,110	.539	.56	61,600	A.
March	2,640	512	1,330	.646	.74	81,800	A.
April	2,600	1,260	1,740	.845	.94	104,000	A.
May	3,320	1,020	1,990	.966	1.11	122,000	A.
June	2,520	438	1,400	.679	.76	83,300	A.
July	348	9	47.8	.023	.03	2,940	C.
August	9	5	6.7	.0033	.004	412	D.
September	58	5	15.8	.0077	.009	940	C.
October	392	104	333	.162	.19	20,500	A.
November	438	326	392	.190	.21	23,300	A.
December	.....	.....	330	.160	.18	20,300	D.
The year	5,900	5	786	.382	5.17	569,000	

NOTE.—Mean discharge Dec. 16 to 31 estimated on account of ice at 300 second-feet.

OGDEN RIVER NEAR OGDEN, UTAH.

Location.—At the Utah Light & Railway Co.'s dam, 2½ miles above the terminus of the Ogden Canyon Electric Railway and about 8 miles from Ogden post office, in the NW. ¼ SW. ¼ sec. 16, T. 6 N., R. 1 E., Salt Lake base and meridian.

Records available.—January, 1904, to December, 1911.

Drainage area.—Not measured.

Gage.—Hook gage.

Discharge measurements.—The discharge in the river is measured by a weir consisting of eleven 5-foot openings each crested as a separate weir. The water diverted through the power plant is measured by two Venturi meters, each having a 24-inch throat. A waste pipe having a maximum capacity of 2 second-feet is situated at the mouth of the canyon and is taken account of in the company's records.

Accuracy.—The Utah Light & Railway Co. considers the accuracy of these records to be under 2 per cent error.

Cooperation.—Records of daily discharge furnished by the Utah Light & Railway Co.

Daily discharge, in second-feet, of Ogden River near Ogden, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	66.5	1,440.8	88.8	570.9	795.5	276.8	89.3	53.3	43.6	46.8	66.4	53.8
2	52.6	743.5	84.2	625.3	702.4	270.5	94.2	51.2	47.2	48.7	53.9	52.9
3	47.8	506.9	83.8	669.6	620.8	259.3	84.1	50.4	45.6	66.5	62.3	51
4	58.6	406.8	90.5	665.2	835	245	91.7	46.6	42.5	46.2	67.2	57
5	62.7	356.5	116.1	658.2	987.1	243.5	89.3	50.1	40	58.6	59.6	48.3
6	61.7	291.8	127.9	712.4	1,234.5	218.3	93.7	45.7	48	46	64.7	58.3
7	65.5	236.1	150.3	599.5	1,179.4	182.7	82.2	43	46.5	45.1	64.3	53.7
8	67.1	198	354.7	519.9	1,159.7	195.3	92.5	51.3	50.3	50.2	66.6	58.1
9	63.5	175.1	198.9	504.5	1,222.3	212.3	88.3	44.4	44.8	39.8	66.2	54.2
10	67.9	180.5	297.3	591.8	980.2	193.2	83.6	37.9	45.7	73.2	85.4	48.1
11	66	164.3	545.8	541.3	941.7	169.4	82.2	50.8	51	59	75.8	56
12	67.2	180.7	329.7	520.7	776.7	165.6	70.5	39.9	39.7	52.8	61.4	54.8
13	63.4	171.6	275.9	453.7	812	145	75.1	46.9	52.4	53.9	57.8	60.7
14	66.7	161.1	266.9	434.7	823.3	156.3	78.1	42.8	51.2	53	64.1	57.7
15	64.5	124.5	258.7	416.4	826.7	194.7	68.3	48.7	43	49.6	62	59
16	69.4	115	305.9	395.2	795.7	195	61.5	46.8	46.9	55.8	62.8	62
17	64.5	116.7	329.2	296.3	633.1	183.6	73.7	42.6	47.5	54.6	66.8	53.7
18	67.5	121.9	352	380.9	655.2	172	71.5	46.7	48	59.6	69.2	57.9
19	64.8	105.1	351.7	418.7	812.4	160.1	69.5	49.5	46.8	59.3	67.3	52
20	69.3	103.8	388.6	411.2	525.7	139.9	63.6	47	47	55.6	60.3	54.4
21	69.5	95.6	415.7	383.8	447.4	144.2	59	46.1	51.3	60.8	68.5	57.9
22	63	73.9	495.6	364.7	408.1	138.5	66.6	44.5	50.8	46.5	58.8	49
23	59	100.9	497.2	361.9	409.5	127	52.9	44.8	54.4	57	59.6	59
24	64.5	96.3	661.3	430.1	412.8	121.7	57.5	47.1	49.6	57.4	57.9	55.1
25	296.3	109.8	691.7	502.1	440.8	118	70.7	52.1	47.4	51.1	64.3	54.6
26	166.4	95.6	497.3	647.3	473.7	114.5	61.6	50	50.4	56.3	54.4	49.5
27	130.3	82.8	433.8	764.8	450.7	114.5	54.3	47.9	43.3	56.6	56.6	55.9
28	135.5	86.9	384.1	918.6	389	98.1	60.5	51	44.7	48.6	52.4	62.2
29	165.3	.....	370	962.6	381.1	98.1	56.3	50.2	53.5	61.1	61.1	54
30	1,269.6	.....	399.2	676.2	315.2	84	53.5	47.5	59.9	50.6	62.1	62.9
31	2,444.6	.....	462.1	.....	299.8	.....	53.1	43	.....	60	.....	67

Monthly discharge of Ogden River near Ogden, Utah, for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
January	2,440	48	198	12,200
February	1,440	74	237	13,200
March	692	84	332	20,400
April	963	296	547	32,500
May	1,230	300	702	43,200
June	277	84	171	10,200
July	94	53	72.5	4,460
August	53	38	47.1	2,900
September	60	40	47.8	2,840
October	73	40	54.2	3,330
November	85	52	63.3	3,770
December	67	48	55.8	3,430
The year	2,440	38	210	152,000

NOTE.—Monthly values computed by engineers of the United States Geological Survey.

JORDAN RIVER BASIN.

MAPLE CREEK NEAR SPRINGVILLE, UTAH.

Location.—About half a mile above the mouth of Maple Creek canyon, about 4 miles southeast of Springville post office, in the NE. ¼ NW. ¼ sec. 13, T. 8 S., R. 3 E.

Records available.—November 10, 1910, to December 31, 1911.

Drainage area.—Approximately 10.8 square miles.

Gage.—Staff gage inside of flume, installed February 16, 1911, bears no determined relation to original gage installed November 10, 1910.

Channel.—Wooden rectangular flume.

Discharge measurements.—Made by wading at upper end of the flume, or in case of flood, from a board across top of flume.

Winter flow.—Creek freezes over during winter.

Accuracy.—Records good.

Cooperation.—Maintained in cooperation with the United States Weather Bureau.

Discharge measurements of Maple Creek near Springville, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Feb. 16	A. B. Purton	0.20	0.53
Apr. 1	J. C. Dort	.25	.90
6	G. H. Canfield	.26	1.13
May 5	G. C. Baldwin	.37	1.98
5	....do	.37	1.98

NOTE.—All measurements made by wading in various parts of flume.

Daily gage height, in feet, of Maple Creek near Springville, Utah, for 1911.

[Lewis Gillilan, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.30	1.48	0.29	0.26	0.36	0.32	0.23	0.22	0.22	0.22	0.21	0.12
2	1.25	1.47	.29	.25	.31	.32	.23	.22	.22	.29	.20	.15
3	1.25	1.45	.29	.25	.32	.32	.22	.22	.22	.24	.20	.15
4	1.40	1.44	.29	.25	.34	.33	.22	.22	.22	.23	.20	.15
5	1.42	1.44	.29	.25	.37	.35	.22	.22	.22	.22	.21	.15
6	1.43	1.44	.29	.26	.41	.35	.22	.22	.22	.22	.20	.15
7	1.43	1.40	.28	.26	.41	.35	.22	.22	.22	.21	.20	.15
8	1.43	1.41	.28	.26	.41	.35	.22	.22	.21	.21	.21	.15
9	1.44	1.41	.29	.28	.42	.39	.22	.22	.21	.20	.21	.13
10	1.44	1.41	.30	.27	.43	.36	.22	.22	.21	.23	.20	.15
11	1.44	1.41	.31	.27	.42	.34	.21	.22	.21	.23	.09	.15
12	1.44	1.42	.30	.27	.40	.30	.21	.22	.22	.22	.12	.17
13	1.44	1.42	.29	.26	.35	.30	.21	.22	.22	.20	.15	.17
14	1.45	1.42	.29	.26	.35	.32	.21	.22	.21	.20	.17	.17
15	1.46	.....	.29	.26	.35	.36	.21	.22	.21	.20	.21	.18
16	1.46	.20	.29	.26	.35	.39	.21	.22	.21	.20	.23	.18
17	1.46	.13	.29	.26	.34	.35	.21	.22	.21	.20	.23	.12
18	1.46	.13	.29	.26	.34	.33	.21	.22	.21	.20	.22	.15
19	1.46	.13	.29	.26	.32	.30	.21	.22	.21	.20	.22	.13
20	1.46	.22	.29	.26	.30	.29	.22	.22	.20	.20	.22	.11
21	1.46	.25	.29	.26	.30	.28	.22	.22	.20	.20	.22	.10
22	1.28	.27	.29	.27	.30	.26	.22	.22	.20	.20	.22	.08
23	1.21	.29	.29	.27	.30	.25	.22	.22	.21	.20	.23	.05
24	1.48	.29	.30	.28	.32	.25	.22	.22	.20	.20	.23	.06
25	1.50	.30	.30	.29	.36	.24	.22	.22	.20	.20	.23	.08
26	1.46	.29	.29	.29	.43	.24	.22	.22	.19	.20	.21	.10
27	1.46	.27	.29	.30	.38	.24	.22	.22	.19	.20	.13	.10
28	1.46	.28	.28	.31	.35	.23	.21	.22	.19	.20	.10	.10
29	1.51	.....	.27	.41	.32	.23	.21	.22	.23	.20	.10	.11
30	1.49	.....	.27	.39	.30	.23	.21	.22	.22	.19	.10	.14
31	1.49	.....	.27	.....	.31	.....	.22	.22	.....	.19	.....	.18

NOTE.—Relation of gage height to discharge affected by ice about Dec. 1 to 31. Gage heights Jan. 1 to Feb. 14 refer to original staff gage. Feb. 15, 1911, the creek was turned into a flume and a new gage was installed next day at an independent datum. No estimates for 1910 and 1911 up to Feb. 15 have been made.

Daily discharge, in second-feet, of Maple Creek near Springville, Utah, for 1911.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1		1.27	1.03	1.89	1.53	0.79	0.71	0.71	0.71	0.63
2		1.27	.95	1.44	1.53	.79	.71	.71	1.27	.55
3		1.27	.95	1.53	1.53	.71	.71	.71	.87	.55
4		1.27	.95	1.71	1.62	.71	.71	.71	.79	.55
5		1.27	.95	1.98	1.80	.71	.71	.71	.71	.63
6		1.27	1.03	2.34	1.80	.71	.71	.71	.71	.55
7		1.19	1.03	2.34	1.80	.71	.71	.71	.63	.55
8		1.19	1.03	2.34	1.80	.71	.71	.63	.63	.63
9		1.27	1.19	2.43	2.16	.71	.71	.63	.55	.63
10		1.35	1.11	2.52	1.89	.71	.71	.63	.79	.55
11		1.44	1.11	2.43	1.71	.63	.71	.63	.79	.02
12		1.35	1.11	2.25	1.35	.63	.71	.71	.71	.09
13		1.27	1.03	1.80	1.35	.63	.71	.71	.55	.22
14		1.27	1.03	1.80	1.53	.63	.71	.63	.55	.33
15		1.27	1.03	1.80	1.89	.63	.71	.63	.55	.63
16	0.55	1.27	1.03	1.80	2.16	.63	.71	.63	.55	.79
17	.13	1.27	1.03	1.71	1.80	.63	.71	.63	.55	.79
18	.13	1.27	1.03	1.71	1.62	.63	.71	.63	.55	.71
19	.13	1.27	1.03	1.53	1.35	.63	.71	.63	.55	.71
20	.71	1.27	1.03	1.35	1.27	.71	.71	.55	.55	.71
21	.95	1.27	1.03	1.35	1.19	.71	.71	.55	.55	.71
22	1.11	1.27	1.11	1.35	1.03	.71	.71	.55	.55	.71
23	1.27	1.27	1.11	1.35	.95	.71	.63	.63	.55	.79
24	1.27	1.35	1.19	1.53	.95	.71	.71	.55	.55	.79
25	1.35	1.35	1.27	1.89	.87	.71	.71	.55	.55	.79
26	1.27	1.27	1.27	2.52	.87	.71	.71	.47	.55	.63
27	1.11	1.27	1.35	2.07	.87	.71	.71	.47	.55	.13
28	1.19	1.19	1.44	1.80	.79	.63	.71	.47	.55	.06
29		1.11	2.34	1.53	.79	.63	.71	.79	.55	.06
30		1.11	2.16	1.35	.79	.63	.71	.71	.47	.06
31		1.11		1.44		.71	.71		.47	

NOTE.—Daily discharge determined from a fairly well defined rating curve.

Monthly discharge of Maple Creek near Springville, Utah, for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
February 16–28	1.35	0.13	0.86	22.2	B.
March	1.44	1.11	1.26	77.5	B.
April	2.34	.95	1.16	69.0	B.
May	2.52	1.35	1.83	113	B.
June	2.16	.79	1.42	84.5	B.
July	.79	.63	.684	42.1	B.
August	.71	.71	.71	43.7	B.
September	.79	.47	.633	37.7	B.
October	1.27	.47	.625	38.4	B.
November	.79	.06	.518	30.8	C.
December			.15	9.22	D.
The period				651	

NOTE.—The mean monthly discharge for December was estimated because of ice.

PROVO RIVER AT FORKS, UTAH.

Location.—At Forks, Utah, 12 miles above Provo, in the NE. ¼ sec. 26, T. 5 S., R. 3 E. It is about 600 feet above the mouth of South Fork of Provo River, about 1 mile below the mouth of North Fork, and about 1½ miles above the Telluride Power Co.'s dam.

Records available.—October 22 to December 31, 1911. Records have been obtained on Provo River since February 1, 1905. The discharge of the South Fork added to that obtained at this station gives the total flow of Provo River.

Drainage area.—600 square miles.

Gage.—Inclined staff on left bank driven into the bed of the stream, and firmly braced.

Channel.—Not liable to shift; bed of stream composed of small gravel. One channel during all stages. Both banks are fairly high and not liable to overflow.

Discharge measurements.—Made from cable and car 10 feet below gage.

Winter flow.—No ice forms at this station.

Cooperation.—Station maintained in cooperation with Telluride Power Co. and State of Utah.

Estimates withheld owing to lack of sufficient measurements.

The following discharge measurement was made by Dort and Gilkison by wading at gage:

October 31, 1911: Gage height, 0.84 feet; discharge, 228 second-feet.

Daily gage height, in feet, of Provo River at Forks, Utah, for 1911.

[Frank Dusenberry, observer.]

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1		0.75	11		0.9	21	1.0	0.7
2		.75	12		.95	22	1.0	.7
3		.75	13		.9	23	1.0	.7
4		.75	14		.85	24	.95	.7
5		.75	15		.85	25	.9	.7
6		.75	16	1.05	.9	26	.95	.7
7		.8	17	1.0	.95	27	.95	.7
8		.85	18	1.0	.95	28	.8	.8
9		.8	19	1.0	.9	29	.7	.8
10		.85	20	1.0	.75	30	.7	.8
						31		.8

PROVO RIVER NEAR PROVO, UTAH.

Location.—About 1 mile above Telluride Power Co.'s dam, one-fourth mile below mouth of the South Fork, and 1¼ miles below the mouth of the North Fork, in the NW. ¼ SW. ¼ sec. 26, T. 5 S., R. 3 E.

Records available.—February 1, 1905, to December 31, 1911, when it was discontinued and new stations were established on the main river and the South Fork to obtain better conditions for measuring. A station was maintained at the mouth of canyon from 1889 to 1906.

Drainage area.—640 square miles.

Gage.—Vertical staff installed June 15, 1909, by the Telluride Power Co., to replace vertical gage which was set July 24, 1908, and washed out June 14, 1909. Datum of gage set June 15, 1909, probably the same as that of the gage installed July 24, 1908, but there is no record to this effect. The gage installed February 1, 1905, was an inclined staff on the left bank.

Channel.—One channel at all stages except at low water, when a bar near the left bank divides the current of the stream.

Discharge measurements.—From car and cable.

Winter flow.—No ice forms at this station.

Diversions.—A little water is diverted in Heber Valley near the head of the river.

Accuracy.—Low because of shifting channel.

Cooperation.—Station maintained in cooperation with Telluride Power Co.

Discharge measurements of Provo River above Telluride Power Co.'s dam near Provo, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Feb. 20	A. B. Purton	2.35	298
July 19	Dort and Pharis	2.38	275
19	Gilkison and Pharis	2.38	290
Oct. 22	J. C. Dort	2.10	260

Daily gage height, in feet, of Provo River above Telluride Power Co.'s dam near Provo, Utah, for 1911.

[Frank Dusenberry, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.2	4.0	2.3	2.95	3.05	3.8	2.4	2.2	1.85	2.1	2.15	2.1
2	2.15	3.1	2.35	3.05	2.9	3.9	2.35	1.95	1.85	2.4	2.15	2.1
3	2.5	2.9	2.3	3.15	3.0	3.7	2.3	1.95	1.9	2.25	2.2	2.1
4	2.25	2.75	2.3	2.95	2.7	3.85	2.3	1.95	1.9	2.1	2.2	2.1
5	2.4	2.9	2.4	2.9	2.9	4.15	2.4	1.9	1.9	2.1	2.2	2.15
6	2.3	3.0	2.45	3.2	3.05	4.35	2.4	1.95	1.85	2.05	2.2	2.15
7	2.25	2.7	2.5	2.85	3.35	4.5	2.35	1.95	1.85	2.05	2.2	2.2
8	2.25	2.5	2.75	2.9	3.3	4.35	2.35	1.95	1.85	2.15	2.25	2.25
9	2.3	2.6	3.4	2.9	3.4	4.3	2.35	1.9	1.9	2.1	2.25	2.2
10	2.5	2.55	3.65	3.0	3.5	4.3	2.10	1.9	1.9	2.25	2.4	2.25
11	2.2	2.7	3.95	2.95	3.3	4.15	2.15	1.9	1.85	2.2	2.5	2.3
12	2.2	2.6	2.9	2.8	3.4	4.0	2.2	1.9	1.85	2.2	2.35	2.35
13	2.25	2.4	2.75	2.75	3.3	4.2	2.3	1.9	1.9	2.2	2.25	2.25
14	2.25	2.4	2.65	2.7	3.45	4.2	2.3	1.9	1.9	2.2	2.3	2.25
15	2.3	2.3	2.7	2.65	3.6	4.65	2.25	1.9	1.9	2.2	2.4	2.25
16	2.35	2.25	2.75	2.75	3.45	4.25	2.3	1.9	1.9	2.2	2.45	2.3
17	2.25	2.25	2.7	2.65	3.50	4.2	2.4	1.9	1.9	2.15	2.4	2.35
18	2.2	2.1	2.75	2.5	3.5	4.0	2.4	1.9	1.9	2.15	2.4	2.35
19	2.1	2.05	2.4	2.45	3.45	3.8	2.3	1.85	1.9	2.15	2.4	2.3
20	2.2	2.15	2.6	2.45	3.5	3.7	2.3	1.85	1.9	2.15	2.4	2.15
21	2.3	2.3	2.75	2.35	3.4	3.7	2.45	1.8	1.85	2.1	2.4	2.1
22	2.1	2.3	2.7	2.4	3.35	3.6	2.45	1.8	1.85	2.1	2.4	2.1
23	2.35	2.15	2.8	2.45	3.5	3.3	2.35	1.8	1.9	2.1	2.4	2.1
24	2.3	2.3	3.15	2.5	3.5	3.3	2.3	1.85	2.05	2.1	2.35	2.1
25	4.75	2.4	2.95	2.6	3.6	3.15	2.35	1.85	1.95	2.1	2.3	2.1
26	3.0	2.4	2.6	2.75	3.6	3.00	2.3	1.85	1.9	2.1	2.35	2.1
27	2.7	2.2	2.7	2.8	3.6	2.95	2.3	1.85	2.0	2.1	2.35	2.1
28	2.55	2.2	2.65	2.85	3.4	2.7	2.2	1.85	2.0	2.1	2.25	2.2
29	2.8	.....	2.75	2.95	3.25	2.7	2.3	1.85	2.0	2.15	2.05	2.2
30	3.7	.....	2.8	3.0	3.3	2.5	2.35	1.85	2.25	2.15	2.05	2.2
31	5.75	.....	2.85	.....	3.4	.....	2.2	1.85	.....	2.15	.....	2.2

Daily discharge, in second-feet, of Provo River above Telluride Power Co.'s dam near Provo, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	300	1,000	270	510	550	900	300	240	172	240	285	270
2	285	570	285	550	490	950	285	172	172	335	285	270
3	410	490	270	595	530	850	270	172	185	318	300	270
4	318	430	270	510	410	925	270	172	185	270	300	270
5	370	490	300	490	490	1,080	300	160	185	270	300	285
6	335	530	318	620	550	1,180	300	172	172	255	300	285
7	318	410	335	470	690	1,250	285	172	172	255	300	300
8	318	335	430	490	670	1,180	285	172	172	285	318	318
9	335	370	710	490	710	1,150	285	160	185	270	318	300
10	410	352	830	530	760	1,150	210	160	185	318	370	318
11	300	410	975	510	670	1,080	225	160	172	300	410	335
12	300	370	490	450	710	1,000	240	160	172	300	352	352
13	318	300	430	430	670	1,100	270	160	185	300	318	318
14	318	300	390	410	735	1,100	270	160	185	300	335	318
15	335	270	410	390	810	1,320	255	160	185	300	370	318

Daily discharge, in second-feet, of Provo River above Telluride Power Co.'s dam near Provo, Utah, for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
16	352	255	430	430	735	1,120	270	160	185	300	390	335
17	318	255	410	390	760	1,100	300	160	185	285	370	352
18	300	210	430	335	760	1,000	300	160	185	285	370	352
19	270	198	300	318	735	900	270	148	185	285	370	335
20	300	225	370	318	760	850	270	148	185	285	370	285
21	335	270	430	285	710	850	318	160	172	270	370	270
22	270	270	410	300	690	810	318	160	172	270	370	270
23	352	225	450	318	760	670	285	160	185	270	370	270
24	335	270	595	335	760	670	270	172	225	270	352	270
25	1,480	300	510	370	810	595	285	172	198	270	335	270
26	615	300	370	430	810	530	270	172	185	270	352	270
27	490	240	410	450	810	510	270	172	210	270	352	270
28	430	240	390	470	710	410	240	172	210	270	318	300
29	530	.....	430	510	645	410	270	172	210	285	255	300
30	950	.....	450	530	670	335	285	172	285	285	255	300
31	1,920	.....	470	.....	710	.....	240	172	.....	285	.....	300

NOTE.—Daily discharge determined from two poorly defined rating curves, one applicable Jan. 1 to 30 and Oct. 3 to Dec. 31; the other Jan. 31 to Aug. 20. Indirect method for shifting channels used Aug. 21 to Oct. 3, 1911.

Monthly discharge of Provo River above Telluride Power Co.'s dam near Provo, Utah, for 1911.

[Drainage area, 640 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	1,920	270	458	0.716	0.83	28,200	D.
February	1,000	198	353	.552	.57	19,600	D.
March	975	270	438	.684	.79	26,900	D.
April	620	285	441	.689	.77	26,200	D.
May	810	410	686	1.07	1.23	42,200	D.
June	1,320	335	899	1.40	1.56	53,500	D.
July	318	210	275	.430	.50	16,900	D.
August	240	148	167	.261	.30	10,300	D.
September	285	172	189	.295	.33	11,200	D.
October	335	240	283	.442	.51	17,400	D.
November	410	255	336	.523	.58	19,900	D.
December	352	270	299	.467	.54	18,400	D.
The year	1,920	148	402	.628	8.51	291,000	

SOUTH FORK OF PROVO RIVER AT FORKS, UTAH.

Location.—At Forks, Utah, 12 miles above Provo, in the NW. ¼ SE. ¼ sec. 26, T. 5 S., R. 3 E., at a point about 150 feet above the confluence of the South Fork with Provo River.

Records available.—Station established October 22, 1911; records begun November 17, 1911. The discharge of the South Fork added to that of Provo River at Forks will give the total flow of Provo River available for diversion at the Telluride Power Co.'s dam.

Drainage area.—30 square miles.

Gage.—Vertical staff driven into the stream bed at the right bank 150 feet above the mouth and 40 feet southeast of the Denver & Rio Grande Railroad tracks.

Channel.—Probably permanent; well-defined control 30 feet below the gage composed of gravel and small bowlders. One channel at all stages. The left bank is liable to overflow in extreme floods.

Discharge measurements.—Made by wading about 30 feet below the gage.
Winter flow.—No ice forms at this station.
Cooperation.—Maintained in cooperation with Telluride Power Co.

The following discharge measurement was made by Dort and Gilkison by wading belo wgage.

October 31, 1911: Gage height, 2.36 feet; discharge, 35.3 second-feet.

Daily gage height, in feet, of South Fork of Provo River at Forks, Utah, for 1911.

[Frank Dusenberry, observer.]

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1		2.25	11		2.35	21	2.35	2.25
2		2.25	12		2.35	22	2.35	2.25
3		2.25	13		2.3	23	2.35	2.25
4		2.25	14		2.3	24	2.35	2.25
5		2.3	15		2.3	25	2.35	2.30
6		2.3	16		2.3	26	2.35	2.30
7		2.3	17	2.35	2.3	27	2.35	2.30
8		2.3	18	2.35	2.3	28	2.35	2.30
9		2.3	19	2.35	2.3	29	2.25	2.30
10		2.35	20	2.35	2.25	30	2.25	2.30
						31		2.30

LITTLE COTTONWOOD CREEK NEAR SALT LAKE CITY, UTAH.

Location.—At the mouth of the canyon, about one-fourth mile below the county bridge, 1½ miles above Armstrong Creek, half a mile below the Flagstaff smelting works, and in the SW. ¼ sec. 2, T. 3 S., R. 1 E.
Records available.—November 11, 1898, to May 20, 1899; August, 1904, to December, 1911.
Drainage area.—27.7 square miles.
Gage.—Hub at level with weir crest; depth of water measured with carpenter's rule.
Discharge measurements.—The flow of the stream is measured by two 15-foot Cippoletti weirs.
Winter flow.—No ice at the weir.
Diversions.—The Despain ditches, one on each side of the stream, divert water about 1½ miles above the weir. These ditches irrigate one small farm. Nearly all the water is used during the irrigating season.
Accuracy.—Records excellent.
Cooperation.—Records of daily discharge furnished by Salt Lake City engineer.

Daily discharge, in second-feet, of Little Cottonwood Creek near Salt Lake City, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.58	62.87	21.27						7.52	15.94	11.07	7.52
2	9.58	60.17	21.27						7.52	21.27	8.90	6.89
3	11.87	55.02	21.27						7.52	25.17	9.58	6.89
4	10.35	44.96	21.27						6.89	26.13	8.90	5.63
5	10.35	47.41	21.27						6.89	25.17	8.90	5.63
6	10.35	35.7	22.27						6.22	25.17	9.58	5.63
7	11.07	33.48	22.27						6.22	24.13	9.58	4.46
8	11.07	17.60	20.38						5.63	23.19	9.58	5.63
9	11.07	17.60	17.60						5.01	23.19	8.17	5.63
10	11.87	16.76	15.94						5.63	23.19	7.52	5.63
11	11.07	17.60	15.94						6.22	22.27	7.52	5.63
12	11.07	17.60	17.60						6.89	21.27	8.17	5.63
13	11.07	16.76	17.60						8.90	19.41	7.52	4.46
14	10.35	15.94	17.60						8.17	19.41	7.21	5.63
15	10.35	15.94	17.60					21.27	8.17	15.94	6.89	5.63

Daily discharge, in second-feet, of Little Cottonwood Creek near Salt Lake City, Utah, for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
16	11.07	16.76	18.54	.....	.....	.....	.....	19.41	7.52	14.25	6.89	6.22
17	11.07	16.76	18.54	.....	.....	.....	.....	19.41	6.89	13.39	6.89	6.22
18	11.07	17.60	17.60	.....	.....	.....	.....	18.54	6.89	12.62	8.17	5.63
19	10.35	18.54	17.60	.....	.....	.....	.....	17.60	6.89	12.62	9.58	5.63
20	10.35	19.41	17.60	.....	.....	.....	.....	16.76	6.22	12.62	11.07	6.22
21	11.07	19.41	17.60	.....	.....	.....	.....	17.60	6.22	12.62	9.58	5.63
22	11.07	18.54	21.27	.....	.....	.....	.....	19.41	6.22	14.25	9.58	6.22
23	10.35	18.54	23.19	.....	.....	.....	.....	14.25	8.90	14.25	9.58	6.22
24	11.07	17.60	23.19	.....	.....	.....	.....	12.62	9.58	14.25	9.58	5.63
25	11.87	18.54	25.17	.....	.....	.....	.....	14.25	9.58	13.39	10.35	6.22
26	11.87	19.41	26.13	.....	.....	.....	.....	11.07	10.35	13.39	8.90	5.63
27	11.87	19.41	19.41	.....	.....	.....	.....	9.58	12.62	12.62	8.90	5.63
28	12.62	26.13	19.41	.....	.....	.....	.....	8.90	12.62	12.62	8.17	5.63
29	19.41	.....	23.19	.....	.....	.....	.....	8.90	13.39	11.87	8.17	5.63
30	31.31	.....	27.20	.....	.....	.....	.....	8.17	14.25	11.07	8.17	4.46
31	62.87	.....	31.31	.....	.....	.....	.....	7.52	.....	11.87	.....	4.46

NOTE.—No record from Apr. 1 to Aug. 14, as the weir was out of order.

Monthly discharge of Little Cottonwood Creek near Salt Lake City, Utah, for 1911.

[Drainage area, 27.7 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	62.9	9.58	13.6	0.491	0.57	836
February	62.9	15.9	25.8	.931	.97	1,430
March	31.3	15.9	20.6	.744	.86	1,270
August (15-31)	21.3	7.52	14.4	.520	.33	486
September	14.2	5.01	8.05	.291	.32	479
October	26.1	11.1	17.4	.628	.72	1,070
November	11.1	6.89	8.76	.316	.35	521
December	7.52	4.46	5.74	.207	.24	353

NOTE.—Monthly values computed by engineers of the United States Geological Survey.

BIG COTTONWOOD CREEK NEAR SALT LAKE CITY, UTAH.

Location.—At the mouth of the canyon, just below the county bridge, in the SW. ¼ NE. ¼ sec. 25, T. 2 S., R. 1 E.

Records available.—November, 1898, to December, 1911.

Drainage area.—48.5 square miles.

Gage.—Vertical graduated glass tube set on lower side of dam.

Discharge measurements.—Made with two 15-foot Cippoletti weirs.

Winter flow.—No ice forms at the weirs.

Diversions.—The Butler ditch, which takes out water from the left bank about three-fourths of a mile above the weir, is entitled to about 2 second-feet during irrigating season; not included in discharge record. The water is used for irrigation and for municipal supply in Salt Lake City.

Accuracy.—Excellent.

Cooperation.—Records of daily discharge furnished by Salt Lake City engineer.

Daily discharge, in second-feet, of Big Cottonwood Creek near Salt Lake City, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	37.87	70.92	41.20	60.42	87.68	264.52	149.70	69.58	37.87	49.31	34.64	26.52
2	37.87	61.70	38.97	66.92	84.80	285.67	154.92	66.92	37.87	50.50	29.47	26.52
3	.....	50.50	38.97	72.27	81.96	285.67	160.19	68.24	36.79	48.12	29.47	26.52
4	.....	49.31	37.87	72.27	101.00	307.36	137.78	64.29	35.71	46.94	29.47	25.55
5	.....	48.12	41.20	73.63	134.43	334.08	132.77	61.70	34.64	45.77	34.64	26.52
6	.....	50.50	40.08	73.63	196.79	350.01	129.46	57.89	38.97	43.46	31.51	26.52
7	.....	41.20	36.79	68.24	200.59	320.63	129.46	57.89	37.87	43.46	28.48	25.55
8	.....	34.64	32.54	64.29	212.12	366.18	129.46	51.71	37.87	40.08	30.49	25.55
9	41.20	34.64	38.97	66.92	223.87	361.53	116.52	52.93	35.71	38.97	31.51	25.55
10	42.33	46.94	45.77	73.63	204.41	272.91	110.23	52.93	34.64	43.46	31.51	26.52
11	38.97	43.46	52.93	79.15	170.90	287.82	104.05	52.93	34.64	44.61	28.48	26.52
12	36.79	43.46	50.50	73.63	151.44	350.01	107.12	50.50	31.51	42.33	30.49	25.55
13	31.51	43.46	44.61	69.58	154.92	387.32	104.05	48.12	35.71	42.33	29.47	25.55
14	41.20	41.20	44.61	68.24	163.74	375.52	104.05	50.50	38.97	35.71	29.47	23.66
15	40.09	38.97	48.12	64.29	161.96	329.58	99.49	49.31	35.71	37.87	28.48	25.55
16	38.97	34.64	48.12	61.70	154.92	289.97	93.52	46.94	35.71	37.87	32.54	25.55
17	40.09	32.54	48.12	64.29	156.67	289.97	96.49	46.94	34.64	36.79	31.51	25.55
18	34.64	33.59	44.61	65.60	169.10	285.67	96.49	45.77	34.64	35.71	31.51	25.55
19	37.87	36.79	48.12	68.24	161.96	289.97	95.00	45.77	34.64	34.64	30.49	23.66
20	36.79	38.97	46.94	70.92	142.85	296.45	81.96	43.46	34.64	34.64	29.47	24.60
21	37.87	40.08	49.31	68.24	136.10	275.03	80.55	43.46	34.64	33.59	30.49	24.60
22	40.09	35.71	51.71	62.99	134.43	268.70	76.37	42.33	34.64	33.59	29.47	23.66
23	33.59	43.46	51.71	52.93	165.52	245.95	76.37	42.33	36.79	34.64	26.52	24.60
24	34.64	38.97	60.42	56.63	196.79	239.86	69.58	42.33	37.87	34.64	28.48	24.60
25	43.46	43.46	60.42	62.75	216.01	214.07	68.24	42.33	36.79	32.54	27.49	23.66
26	40.08	40.08	57.89	68.87	243.91	191.14	72.27	42.33	35.71	32.54	28.48	21.82
27	40.08	32.54	51.71	75.00	216.01	187.41	68.24	40.08	40.08	34.64	27.49	25.55
28	40.08	38.97	51.71	86.24	193.02	185.55	70.92	40.08	37.87	32.54	20.91	24.60
29	37.87	.....	51.71	93.52	189.27	181.85	66.92	38.97	35.71	31.51	22.73	24.60
30	56.63	.....	52.93	90.58	204.41	172.71	66.92	37.87	46.94	29.47	23.66	24.60
31	79.15	.....	59.15	.....	237.84	.....	70.92	37.87	.....	31.51	.....	23.66

NOTE—Discharge on April 25–26 and Aug. 23 interpolated by engineers of the United States Geological Survey.

Monthly discharge of Big Cottonwood Creek near Salt Lake City, Utah, for 1911.

[Drainage area, 48.5 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	79.2	31.5	40.2	0.829	0.96	2,470
February	70.9	32.5	42.5	.877	.91	2,360
March	60.4	32.5	47.3	.975	1.12	2,910
April	93.5	52.9	69.9	1.44	1.61	4,160
May	238	82.0	169	3.49	4.02	10,400
June	387	173	283	5.84	6.52	16,800
July	160	66.9	101	2.08	2.40	6,210
August	69.6	37.9	49.5	1.02	1.18	3,040
September	46.9	31.5	36.5	.753	.84	2,170
October	50.5	29.5	38.4	.792	.91	2,360
November	34.6	20.9	29.3	.604	.67	1,740
December	26.5	21.8	25.1	.518	.60	1,540
The year	366	20.9	77.7	1.60	21.66	56,200

NOTE.—The Butler ditch diverts approximately 2 second-feet during the irrigating season above the weirs, and this amount is not included in the above record. Discharge Jan. 3 to 8 estimated at 38 second-feet. Monthly values computed by engineers of the United States Geological Survey.

MILL CREEK NEAR SALT LAKE CITY, UTAH.

Location.—Near the mouth of canyon, at a weir in the SW. ¼ NW. ¼ sec. 31, T. 1 S., R. 2 E. A weir is also located in the power plant tailrace in the SE. ¼ NE. ¼ sec. 36, T. 1 S., R. 1 E.

Records available.—Fall of 1898 to December, 1911.

Drainage area.—21.3 square miles.

Gage.—Depth of water measured by a carpenter's rule from a hub set level with crest of weir in creek and by a hook gage in tailrace.

Discharge measurements.—There is a 12.5-foot Cippoletti weir in the main stream and a 5-foot rectangular weir in the tailrace of the power plant.

Winter flow.—No ice forms at the weir.

Diversions.—Most of the water is used for irrigation during the summer season.

Accuracy.—Excellent.

Cooperation.—Records of daily discharge furnished by Salt Lake City engineer.

Daily discharge, in second-feet, of Mill Creek near Salt Lake City, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.33	5.58	7.04	9.03	11.48	36.37	16.67	11.05	7.76	6.64	6 87	5.33
2	11.33	5.58	7.04	8.73	11.48	36.37	15.07	11.05	7.76	6.64	6.34	5.33
3	5.26	5.58	7.04	8.73	11.48	36.37	15.07	11.05	7.76	6.64	6.34	5.11
4	5.26	5.58	7.04	8.73	11.48	40.72	15.07	11.05	7.76	6.64	6.34	5.27
5	5.26	5.26	7.46	8.73	15.74	40.72	15.07	11.05	7.76	6.64	6.34	5.27
6	5.26	3.71	7.46	8.73	15.74	40.72	15.07	11.05	7.76	6.64	6.34	5.27
7	5.26	3.71	7.46	8.73	18.35	40.72	15.07	11.05	7.76	6.64	6.34	5.27
8	5.26	3.71	7.62	8.73	18.35	35.76	14.66	11.05	7.48	7.76	6.34	5.27
9	5.26	3.42	7.62	10.27	18.35	31.21	14.66	11.05	7.48	7.76	6.34	5.27
10	5.26	3.71	7.32	10.27	18.35	31.21	14.66	11.05	6.89	7.76	6.34	5.27
11	5.26	3.71	7.32	10.27	18.35	30.66	14.66	7.76	6.89	7.76	6.34	5.27
12	5.26	3.71	7.62	10.27	18.35	30.66	14.66	7.76	6.89	7.76	6.34	5.27
13	5.26	3.71	7.62	10.27	18.35	30.66	14.66	7.76	6.89	7.76	6.34	5.27
14	5.26	3.71	7.62	10.27	18.35	30.66	12.99	7.76	6.89	7.76	6.34	6.64
15	5.26	3.71	7.34	10.27	22.90	30.66	12.99	7.76	6.89	7.76	6.34	6.64
16	5.26	3.71	7.34	10.27	22.90	28.39	11.04	7.76	6.89	7.17	4.68	6.64
17	5.95	3.71	7.48	10.27	22.90	26.77	11.04	7.76	6.89	7.17	4.68	6.64
18	5.95	3.71	7.48	10.27	22.90	28.39	11.04	7.76	6.89	7.17	4.68	6.64
19	5.95	7.04	7.48	10.27	22.90	28.39	11.04	7.76	6.64	7.17	4.68	6.37
20	5.95	7.04	7.48	10.27	22.90	26.25	11.04	7.48	6.64	7.17	4.68	6.07
21	5.95	7.04	7.48	10.27	22.90	18.51	11.04	7.48	6.64	7.17	4.68	6.34
22	5.26	7.04	7.48	10.27	33.43	18.51	11.04	7.48	6.64	7.17	4.68	6.34
23	5.26	7.04	7.48	10.27	33.43	18.51	11.04	7.48	6.64	7.17	4.68	6.34
24	5.26	7.04	7.48	10.27	33.43	18.51	11.04	7.48	6.64	7.17	4.68	6.04
25	5.26	7.04	7.48	11.48	33.43	18.51	11.04	7.48	6.64	6.45	4.68	5.03
26	3.99	7.04	7.18	11.48	33.43	18.51	11.04	7.48	6.64	6.45	6.34	5.03
27	3.99	7.04	7.18	11.48	33.43	18.51	11.70	7.76	6.64	6.45	5.33	5.03
28	3.99	7.04	7.18	11.48	33.43	18.51	11.70	7.76	6.64	6.45	5.33	5.03
29	3.99	.....	7.18	11.48	33.43	16.67	11.70	7.76	6.64	6.87	5.33	5.82
30	3.99	.....	7.48	11.48	33.43	16.67	11.05	7.76	6.64	6.87	5.33	5.82
31	3.99	.....	9.03	.....	35.76	.....	11.05	7.76	.....	6.87	.....	5.56

NOTE.—The above record represents the total flow in the creek near the mouth of the canyon, including the flow in the creek plus the flow in the tailrace.

Monthly discharge of Mill Creek near Salt Lake City, Utah, for 1911.

[Drainage area, 21.3 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	11.33	3.99	5.52	0.259	0.30	339
February	7.04	3.42	5.21	.245	.26	289
March	9.03	7.04	7.44	.349	.40	457
April	11.48	8.73	10.1	.475	.53	601
May	35.76	11.48	23.3	1.09	1.26	1,430
June	40.72	16.67	28.1	1.32	1.47	1,670
July	16.67	11.04	12.9	.607	.70	793
August	11.05	7.48	8.76	.411	.47	538
September	7.76	6.64	7.03	.330	.37	418
October	7.76	6.45	7.08	.332	.38	435
November	6.87	4.68	5.67	.266	.30	337
December	6.64	5.03	5.69	.267	.31	349
The year	40.72	3.42	10.6	.498	6.75	7,660

NOTE.—Monthly values computed by engineers of the United States Geological Survey.

PARLEYS CREEK NEAR SALT LAKE CITY, UTAH.

Location.—At the mouth of the canyon, just above the intake of the city waterworks, in the northwest corner of the NW. ¼ NW. ¼ sec. 25, T. 1 S., R. 1 E.

Records available.—Fall of 1898 to December, 1911.

Drainage area.—50.1 square miles.

Gage.—Hook.

Discharge measurements.—Two 10-foot Cippoletti weirs are used to determine the flow of the stream.

Winter flow.—No ice forms at the weir.

Diversions.—The city obtains part of its water supply from this creek and any surplus water is used for irrigation during the summer season. The Parleys surplus ditch diverts water from the left bank about 1 mile above the weir.

Accuracy.—Excellent.

Cooperation.—Records of daily discharge furnished by Salt Lake City engineer.

Daily discharge, in second-feet, of Parleys Creek near Salt Lake City, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.98	22.39	9.98	18.33	33.67	27.46	19.65	12.76	7.92	11.06	7.92	6.48
2	4.31	17.68	10.52	20.33	27.46	27.46	19.65	12.76	7.92	12.76	7.92	6.48
3	8.42	15.15	10.52	21.70	25.25	26.72	19.65	12.76	7.92	10.52	7.92	6.48
4	10.52	15.15	12.76	23.10	28.98	24.52	18.99	12.19	7.43	11.06	7.92	7.43
5	10.52	13.94	12.19	28.22	33.67	25.25	18.33	12.19	7.43	11.06	7.92	8.42
6	10.52	13.35	12.76	24.52	34.47	24.52	18.33	11.62	7.43	11.62	8.42	10.52
7	10.52	8.42	12.76	24.52	37.76	24.52	21.70	10.52	7.43	11.62	8.42	12.76
8	10.52	6.48	13.35	24.52	40.28	24.52	16.40	9.98	7.43	11.62	8.93	11.06
9	12.19	7.43	13.94	25.98	45.50	26.72	15.15	9.98	7.43	11.62	9.45	10.89
10	11.62	11.62	13.94	25.98	42.86	24.52	15.15	9.98	7.43	11.62	8.93	10.72
11	10.52	12.19	17.68	25.98	37.76	23.10	15.15	9.98	7.92	12.19	6.95	10.55
12	10.52	12.76	15.77	27.46	35.29	22.39	14.54	9.98	7.92	12.76	4.31	10.38
13	10.52	12.76	14.54	26.72	32.08	22.39	18.99	9.45	7.92	12.19	9.45	10.21
14	10.52	12.76	15.15	24.52	32.87	22.39	19.65	9.45	7.92	11.06	9.45	10.04
15	10.52	4.31	15.77	24.52	32.87	22.39	18.99	9.45	7.92	10.52	8.93	9.86
16	9.98	5.58	16.40	23.81	32.08	22.39	17.68	8.93	7.43	9.98	8.93	9.68
17	4.72	6.48	17.03	24.52	32.08	22.39	16.40	8.93	7.92	9.45	8.93	9.50
18	5.58	7.43	18.33	23.81	32.08	22.39	15.77	8.93	7.92	8.93	9.45	8.93
19	11.06	8.42	18.33	23.10	32.08	22.16	15.77	8.93	7.92	8.93	9.45	4.60
20	11.06	9.98	18.99	24.52	32.08	21.93	15.15	8.42	7.92	8.42	9.45	4.81
21	9.45	6.48	18.99	24.52	32.08	21.70	15.15	8.42	7.92	8.42	9.45	7.38
22	2.80	9.45	20.33	24.52	33.67	21.70	15.15	8.42	7.92	7.92	8.42	5.22
23	4.31	11.06	21.01	25.98	34.47	21.01	14.54	8.93	7.92	7.92	6.48	8.42
24	12.19	11.62	21.70	28.22	34.47	20.33	14.32	8.93	8.93	8.42	6.02	8.42
25	13.94	12.19	22.39	28.98	35.29	18.99	14.10	8.42	8.93	8.42	6.08	8.42
26	12.76	11.62	21.01	31.29	30.50	18.99	13.88	8.42	8.42	8.93	6.14	6.38
27	12.19	8.42	20.39	32.87	29.74	18.99	13.66	8.42	8.42	8.93	6.20	5.22
28	12.19	8.42	18.99	38.59	28.98	18.33	13.44	8.42	8.42	8.93	6.26	11.74
29	12.19	.....	17.68	44.61	25.98	21.70	13.22	8.42	8.42	8.93	6.33	6.38
30	24.52	.....	17.68	53.70	24.52	17.03	12.99	8.42	10.52	8.42	6.40	6.38
31	25.98	.....	17.03	.....	24.52	.....	12.88	8.42	.....	8.42	.....	6.38

NOTE.—Discharge June 19, 20, July 24–31, Nov. 25–30, and Dec. 9–16, interpolated by engineers of the United States Geological Survey.

Monthly discharge of Parleys Creek near Salt Lake City, Utah, for 1911.

[Drainage area, 50.1 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	26.0	4.31	10.9	0.218	0.25	670
February	22.4	4.31	10.8	.216	.22	600
March	22.4	9.98	16.4	.328	.38	1,010
April	53.7	18.3	27.3	.545	.61	1,620
May	45.5	24.5	32.8	.655	.76	2,020
June	27.5	17.0	22.6	.451	.50	1,340
July	21.7	12.9	16.3	.326	.38	1,000
August	12.8	8.42	9.70	.194	.22	596
September	10.5	7.43	8.01	.160	.18	477
October	12.8	7.92	10.1	.202	.23	621
November	9.45	4.31	7.89	.157	.18	469
December	12.8	4.60	8.39	.167	.19	516
The year	53.7	4.31	15.1	.302	4.10	10,900

NOTE.—Monthly values computed by engineers of the United States Geological Survey.

EMIGRATION CREEK NEAR SALT LAKE CITY, UTAH.

Location.—About half a mile below the mouth of the canyon and below Wagener's brewery, in the SW. ¼ NW. ¼ sec. 11, T. 1 S., R. 1 E. A weir is also located in a pipe line about half a mile east of Wagener's brewery, in a tank house.

Records available.—Fall of 1898 to December, 1911.

Drainage area.—29 square miles.

Gage.—Graduated copper plates used as staff gages in pipe line and creek.

Discharge.—Computed from flow over two Cippoletti weirs 2.5 feet and 5 feet long in creek and a 2-foot rectangular weir in pipe line from spring just inside mouth of canyon.

Diversions.—The city has obtained a small part of its water supply by developing a spring a short distance up the canyon, keeping the water out of the creek by means of a pipe line. This water is included in the total run-off record.

Regulation.—None.

Accuracy.—Excellent.

Cooperation.—Records of daily discharge furnished by Salt Lake City engineer.

Daily discharge, in second-feet, of Emigration Creek near Salt Lake City, Utah, for 1911.

[A. Hawkes, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1					6.81					0.60	0.60	
2			1.72	5.80				1.12				
3		3.15							0.39			0.50
4	2.40				5.80	3.15	1.72	.60		.60		
5		3.15		7.83			1.72		.39			.50
6			2.40					1.12			.60	
7				8.93	4.85	3.15	1.72	.60				.50
8										.60		
9							1.72	.60	.39			
10	2.40	2.40		8.93						.60	.60	.50
11					4.85							
12			4.85			3.15			.39			
13	2.40	2.40		6.81			1.56	.60		.60	.60	.50
14					3.99							
15			4.85					.60	.39		.60	.50

Daily discharge, in second-feet, of Emigration Creek near Salt Lake City, Utah, for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
16				5.80		3.15	1.56			0.60		
17		1.72						0.60	0.39		0.60	0.50
18					3.99							.50
19		1.72		6.81					.39	.60	.50	
20	2.40		5.25			3.15		.50				.50
21					3.15			.50	.39			
22						2.98		.50		.60	.50	
23				6.81		2.98	1.12					
24		1.72	5.80					.50	.50			.50
25	3.15											
26			3.99		3.99	2.40			.60	.60	.50	
27								.50				.50
28					3.15	1.72						
29	2.40								.60		.50	
30					3.15			.50				
31												.50

NOTE.—This record is the total flow at the mouth of the canyon and was obtained by adding together the flow in the city pipe line and that in the creek.

Monthly discharge of Emigration Creek near Salt Lake City, Utah, for 1911.

[Drainage area, 29 square miles.]

Month.	Discharge in second-feet.		Run-off.	
	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	2.51	0.087	0.10	154
February	2.26	.078	.08	126
March	4.19	.144	.17	258
April	7.08	.244	.27	421
May	4.31	.148	.17	265
June	2.90	.100	.11	173
July	1.44	.050	.06	88
August	.63	.022	.03	39
September	.44	.015	.02	26
October	.60	.021	.02	37
November	.56	.019	.02	33
December	.50	.017	.02	31
The year	2.28	.079	1.07	1,650

NOTE.—Monthly values computed by engineers of the United States Geological Survey. Discharge interpolated for days of missing record.

CITY CREEK NEAR SALT LAKE CITY, UTAH.

Location.—About 4 miles above the mouth of the canyon, just above the highest point of diversion into the city water supply, in the southeast corner of SE. ¼ sec. 16, T. 1 N., R. 1 E.

Records available.—Fall of 1898 to December, 1911.

Drainage area.—19.2 square miles.

Gage.—Hook.

Discharge.—Computed from flow over two 5-foot Cippoletti weirs.

Winter flow.—No ice forms at the weirs.

Diversions.—All the water is diverted below the weirs for city water supply, except during the spring floods when the surplus water wastes through the streets of Salt Lake City to the Jordan River.

Accuracy.—Records excellent.

Cooperation.—Records of daily discharge furnished by Salt Lake City engineer.

Daily discharge, in second-feet, of City Creek near Salt Lake City, Utah, for 1911.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		22.98	27.32	15.46	10.33	7.42	6.97	6.09	5.53
2		22.75	27.08	15.06	10.00	7.42	6.67	6.09	5.53
3		22.54	26.85	14.87	10.00	7.42	6.67	6.09	5.53
4		23.42	27.79	14.68	10.00	7.28	6.52	6.09	5.53
5		24.50	27.79	14.30	10.00	7.42	6.52	6.09	5.53
6		25.58	27.79	13.92	9.82	7.42	6.52	6.09	5.53
7		26.66	27.79	13.92	9.66	7.42	6.52	6.09	5.53
8		27.74	28.03	13.73	9.32	7.28	6.38	6.38	5.53
9		28.82	26.85	13.73	9.32	7.12	6.38	6.38	5.53
10		29.90	25.00	13.54	9.32	7.12	6.97	6.38	5.53
11		30.98	24.77	13.18	9.00	7.12	6.67	5.95	5.53
12		32.07	24.32	12.80	9.00	7.12	6.67	5.81	5.53
13		33.16	23.42	12.62	8.68	7.12	6.52	5.81	5.53
14		31.66	22.75	12.44	8.68	7.12	6.38	5.81	5.53
15		31.42	21.87	12.44	8.68	6.82	6.38	5.81	5.53
16		31.17	21.00	12.32	8.68	6.82	6.38	5.81	5.53
17		32.16	20.36	12.20	8.52	6.82	6.38	5.81	5.53
18		32.91	19.93	12.08	8.36	6.82	6.38	5.81	5.53
19		31.92	19.51	11.96	8.36	6.82	6.38	5.81	5.53
20		29.95	19.09	11.84	8.20	6.82	6.38	5.81	5.26
21		28.51	18.46	11.72	8.20	6.52	6.38	5.95	5.26
22		28.27	18.26	11.60	8.20	6.67	6.38	6.09	5.26
23		28.03	17.84	11.49	8.20	7.28	6.38	6.09	5.26
24		27.32	17.44	11.38	7.89	6.82	6.38	5.81	5.26
25		28.03	17.04	11.02	7.89	6.82	6.38	5.81	5.26
26		29.23	16.44	11.02	7.89	6.67	6.38	5.81	5.26
27	16.44	28.75	16.24	11 02	7.89	6.52	6.09	5.81	5.26
28	17.24	28.51	15.84	10.68	7.89	6.67	6.09	5.81	5.26
29	18.88	28.03	15.65	10.68	7.58	7.12	6.09	5.53	5.26
30	20.58	27.32	15.65	10.33	7.58	7.28	6.09	5.53	5.26
31		28.03	.....	10.33	7.58	.....	6.09	.....	5.26

NOTE.—Discharge May 5 to 12 and July 16 to 23 interpolated by engineers of the United States Geological Survey.

Monthly discharge of City Creek near Salt Lake City, Utah, for 1912.

[Drainage area, 19.2 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
May	33.2	22.5	28.4	1.48	1.71	1,750
June	28.0	15.6	21.9	1.14	1.27	1,300
July	15.5	10.3	12.5	.653	.75	769
August	10.3	7.58	8.73	.454	.52	537
September	7.42	6.52	7.03	.366	.41	418
October	6.97	6.09	6.43	.334	.39	395
November	6.38	5.53	5.94	.309	.34	353
December	5.53	5.26	5.42	.282	.33	333
The period	.....	.....	.....	.....	.....	5,860

NOTE.—Monthly values computed by engineers of the United States Geological Survey.

SEVIER LAKE BASIN.

SEVIER RIVER NEAR HATCHTOWN, UTAH.

Location.—Just below the Hatchtown reservoir, about 2 miles east of Hatchtown, Utah.

Records available.—June 3 to November 4, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff; datum unchanged.

Channel.—Permanent.

Discharge measurements.—Made from car and cable.
Winter flow.—Conditions unknown.
Diversions.—Water is diverted for the Hatchtown project about 8 miles below the station.
Regulation.—The flow is entirely controlled by the gates in the reservoir.
Accuracy.—Fair.
Cooperation.—Discharge measurements and gage-height records furnished by the State Land Board.

Discharge measurements of Sevier River near Hatchtown, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
June 3	H. S. Kleinschmidt	3.90	539
4	.....do	3.90	532
July 30	J. J. Hayes	1.90	133
31	.....do	2.70	268

Daily gage height, in feet, of Sevier River near Hatchtown, Utah, for 1911.

[J. C. Barnhurst, observer.]

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Day.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	3.00	3.30	2.70	1.80	1.60	16	3.90	2.20	2.10	2.69	3.00	.....
2	.....	2.80	3.30	2.70	1.60	1.60	17	3.90	2.20	2.10	2.70	2.99	.....
3	3.90	2.80	3.30	2.70	1.60	1.60	18	3.50	2.20	2.10	2.70	2.98	.....
4	3.90	2.80	3.30	2.70	1.60	1.60	19	3.30	2.20	2.10	2.70	2.97	.....
5	3.50	3.00	3.30	2.70	1.60	1.60	20	3.30	2.20	2.10	1.60	2.96	.....
6	4.10	3.00	3.30	2.70	1.60	.....	21	3.40	2.20	2.10	1.60	2.95	.....
7	4.10	2.20	3.30	2.70	1.60	.....	22	3.30	2.20	2.10	1.60	1.60	.....
8	4.10	2.20	1.80	2.70	2.30	.....	23	2.90	3.40	2.10	1.60	1.60	.....
9	4.20	2.20	1.80	2.70	2.30	.....	24	2.90	3.40	2.10	1.60	1.60	.....
10	4.20	2.20	1.80	2.69	2.30	.....	25	3.60	3.40	2.10	1.60	1.60	.....
11	4.20	2.20	2.10	2.69	2.30	.....	26	3.60	3.40	2.10	1.60	1.60	.....
12	3.50	2.20	2.10	2.69	2.30	.....	27	3.60	3.40	2.10	1.60	1.60	.....
13	3.40	2.20	2.10	2.68	2.30	.....	28	2.90	3.40	2.10	1.80	1.60	.....
14	3.40	2.20	2.10	2.69	2.30	.....	29	2.90	3.40	2.10	1.80	1.60	.....
15	3.40	2.20	2.10	2.69	3.00	.....	30	2.90	3.30	2.70	1.80	1.60	.....
							31	.....	3.30	.....	.....	1.60	.....

Daily discharge, in second-feet, of Sevier River near Hatchtown, Utah, for 1911.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Day.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	331	395	270	120	96	16	536	179	163	268	331	.....
2	.....	290	395	270	96	96	17	536	179	163	270	329	.....
3	536	290	395	270	96	96	18	441	179	163	270	327	.....
4	536	290	395	270	96	96	19	395	179	163	270	325	.....
5	441	331	395	270	96	.....	20	395	179	163	96	323	.....
6	584	331	395	270	96	.....	21	118	179	163	96	320	.....
7	584	179	395	270	96	.....	22	395	179	163	96	96	.....
8	584	179	120	270	196	.....	23	310	418	163	96	96	.....
9	608	179	120	270	196	.....	24	310	418	163	96	96	.....
10	608	179	120	268	196	.....	25	464	418	163	96	96	.....
11	608	179	163	268	196	.....	26	464	418	163	96	96	.....
12	441	179	163	268	196	.....	27	464	418	163	96	96	.....
13	418	179	163	266	196	.....	28	310	418	163	120	96	.....
14	418	179	163	268	196	.....	29	310	418	163	120	96	.....
15	418	179	163	268	331	.....	30	310	395	270	120	96	.....
							31	.....	395	270	.....	96	.....

Note.—Daily discharge determined from a fairly well defined rating curve.

Monthly discharge of Sevier River near Hatchtown, Utah, for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
June 3–30	608	310	459	25,500	B.
July	418	179	272	16,700	B.
August	395	120	218	13,400	C.
September	270	96	208	12,400	C.
October	331	96	171	10,500	C.
November (1–4)	.....	96	96	760	C.
The period	.....	.....	.....	79,300	

SEVIER RIVER NEAR JUNCTION, UTAH.

Location.—At Harris's ranch, about 1,000 feet below the junction of the East and South forks of Sevier River and about 1½ miles east of Junction, Utah.

Records available.—June 1 to September 30, 1911.

Drainage area.—Not measured.

Gage.—Inclined staff gage on right bank; datum unchanged.

Channel.—Shifting.

Discharge measurements.—Made from car and cable.

Winter flow.—No ice forms at this station.

Diversions.—Some water is diverted for the Hatchtown project about 50 miles above, from the South Fork of Sevier River.

Regulation.—The flow is controlled to a large degree by the Otter Creek reservoir on the East Fork and Hatchtown reservoir on the South Fork.

Accuracy.—Good during the period covered by the record.

Cooperation.—Discharge measurements and gage-height records furnished by the State Land Board.

Discharge measurements of Sevier River near Junction, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
May 24	H. S. Kleinschmidt	1.30	452
29	.....do	1.50	516
June 23	.....do	.70	289
23	.....do	.60	263
24	.....do	.51	238
July 23	.....do	1.30	460
29	J. J. Hayes	1.74	612
Aug. 5	.....do	.70	300
10	.....do	.64	296
12	.....do	.70	303
19	.....do	.80	323
Nov. 27	J. C. Dort	.96	307

Daily gage height, in feet, and discharge, in second-feet, of Sevier River near Junction, Utah, for 1911.

[Charles Harris, observer.]

Day.	June.		July.		August.		September.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	1.5	515	1.1	396	1.3	474	0.6	277
2	1.4	485	1.3	455	1.1	414	.7	302
3	1.3	455	1.3	455	.8	328	.....	.....
4	1.1	396	1.3	455	.8	328	.....	.....
5	1.1	396	1.3	455	.8	328	.....	.....
6	1.1	396	1.3	455	.7	302	.....	.....
7	1.0	368	1.3	455	.5	253	.....	.....
8	1.0	368	1.2	425	.4	230	.....	.....
9	1.3	455	1.1	396	.6	277	.....	.....
10	1.1	396	1.0	368	.6	277	.....	.....
11	1.2	425	1.0	368	.7	302	.....	.....
12	.9	340	1.0	368	.7	302	.....	.....
13	.8	313	1.0	368	.7	302	.....	.....
14	.9	340	1.0	368	.7	302	.....	.....
15	1.2	425	1.0	368	.7	302	.....	.....
16	.9	340	1.0	368	.7	302	.....	.....
17	1.2	425	1.0	368	.8	328	.....	.....
18	1.2	425	1.0	368	.8	328	.....	.....
19	1.2	425	1.1	396	.8	328	.....	.....
20	1.1	396	1.3	455	.9	356	.....	.....
21	1.1	396	1.4	485	.9	356	.....	.....
22	.9	340	1.4	485	.9	356	.....	.....
23	.7	288	1.4	485	.9	356	.....	.....
24	.7	288	1.5	515	.9	356	.9	356
25	.4	219	1.5	515	.9	356	.9	356
26	.7	288	2.0	696	.9	356	.9	356
27	.5	240	2.0	696	.8	328	.6	277
27	.3	198	1.9	664	.8	328	.8	328
29	.9	340	1.8	632	.8	328	.8	328
30	.9	340	1.7	600	.4	230	2.5	856
31	.....	.....	1.7	600	.4	230	.....	.....

NOTE.—Discharge determined from two well-defined discharge rating curves, one applicable from June 1 to July 25, 1911, the other from July 26 to Sept. 29, 1911.

Monthly discharge of Sevier River near Junction, Utah, for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
June	515	198	367	21,800	A.
July	696	368	467	28,700	A.
August	474	230	321	19,700	A.

SEVIER RIVER AT PIUTE RESERVOIR, NEAR JUNCTION, UTAH.

Location.—About 500 yards below the dam for the Piute reservoir and 10 miles south of Marysvale.

Records available.—May 17 to August 31, 1911.

Drainage area.—Not measured.

Gage.—Inclined gage on right bank; datum unchanged.

Channel.—Probably permanent under the cable but shifting at point of control.

Discharge measurements.—Made from car and cable.

Winter flow.—Considerable mush ice flows in the river during the winter.
Diversions.—Very little water is diverted from the Sevier River near this station.
Regulation.—The flow past the station is controlled absolutely by the gates in the dam.
Accuracy.—Good during the period covered by the record.
Cooperation.—Maintained in cooperation with the State Land Board.

Discharge measurements of Sevier River at Piute reservoir, near Junction, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
May 18	H. S. Kleinschmidt	3.60	756
22	do	2.95	536
22	do	1.55	135
23	do	2.72	456
29	do	2.78	464
29	do	2.85	501
June 22	do	2.55	383
25	do	2.18	270
July 13	do	2.63	408
23	do	2.82	473
30	J. J. Hayes	2.94	517
Aug. 6	do	2.63	394
13	do	2.62	403
Nov. 27[a]	J. C. Dort	3.14	389

[a] Affected by ice and change in channel.

Daily gage height, in feet, and discharge, in second-feet, of Sevier River at Piute reservoir, near Junction, Utah, for 1911.

Day.	May.		June.		July.		August.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	.....	470	2.70	432	2.66	418
2	.....	.....	.....	470	2.70	432	2.66	418
3	.....	.....	.....	470	2.60	396	2.60	396
4	.....	.....	.....	470	2.60	396	2.58	389
5	.....	.....	.....	470	2.60	396	2.63	407
6	.....	.....	.....	470	2.70	432	2.63	407
7	.....	.....	.....	470	2.70	432	2.62	403
8	.....	.....	2.80	470	2.80	470	2.72	440
9	.....	.....	.....	460	2.80	470	2.71	436
10	.....	.....	.....	450	2.78	462	2.70	432
11	.....	.....	.....	445	2.77	459	2.67	421
12	.....	.....	.....	435	2.76	455	2.64	410
13	.....	.....	.....	428	2.64	410	2.62	403
14	.....	.....	.....	420	2.70	432	2.62	403
15	.....	.....	.....	412	2.69	428	2.61	400
16	.....	.....	.....	402	2.69	428	2.61	400
17	3.60	790	.....	394	2.69	428	2.61	400
18	3.60	790	2.57	386	2.68	425	2.62	403
19	3.50	750	2.57	386	2.70	432	2.62	403
20	3.50	750	.....	386	2.74	447	2.62	403
21	2.95	530	.....	379	2.81	474	2.62	403
22	2.80	470	2.55	379	2.82	478	2.63	407
23	2.70	432	.....	336	2.82	478	2.63	407
24	2.80	470	2.28	294	2.83	482	2.62	403
25	.....	470	2.18	267	2.87	498	2.62	403
26	.....	470	2.20	272	2.92	518	2.61	400
27	.....	470	2.20	272	2.92	518	2.60	396
28	.....	470	2.20	272	2.94	526	2.59	393
29	2.80	470	2.65	414	2.94	526	2.59	393
30	.....	470	2.65	414	2.94	526	2.58	389
31	.....	470	.....	.....	2.95	530	2.57	386

NOTE.—Discharge determined from a well-defined rating curve. Discharge interpolated for days of missing gage heights.

SEVIER RIVER NEAR MARYSVALE, UTAH.

Location.—At Peter Pitts's ranch, about 6 miles above Marysvale, Utah, 200 yards from the main wagon road, and 3½ miles below the dam for the Piute reservoir, in the SW. ¼ NW. ¼ sec. 23, T. 28 S., R. 3 W. Big Cottonwood Creek enters on the left about three-fourths of a mile above the station.

Records available.—February 18, 1906, to December 31, 1911, when station was discontinued.

Drainage area.—2,560 square miles.

Gage.—Vertical staff; datum unchanged since installation.

Channel.—Somewhat shifting.

Discharge measurements.—Made from car and cable.

Winter flow.—No ice forms at this station.

Diversions.—Very little water is diverted from Sevier River above this station.

Regulation.—The Piute reservoir is situated about 3½ miles above the station, and the total flow of the river is controlled through the gates in the dam.

Accuracy.—Records fair.

Cooperation.—Maintained in cooperation with the State of Utah.

Discharge measurements of Sevier River near Marysvale, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Aug. 5	J. C Dort	3.60	400
Nov. 27[a]	do	2.85	227

[a] Mush ice—river falling rapidly.

Daily gage height, in feet, of Sevier River near Marysvale, Utah, for 1911.

[Martha Pitts, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.7	3.9	.....	3.5	4.2	.....	3.7	3.5	3.4	4.3	3.1	3.0
2	2.7	3.95	2.4	2.6	4.2	.....	3.5	3.5	3.5	4.4	3.1	2.8
3	2.0	3.95	2.4	2.6	.....	4.0	3.5	3.5	3.5	4.4	3.0	.....
4	.....	4.0	2.4	2.6	.....	4.0	3.5	3.5	3.4	4.4	3.0	.....
5	.....	4.0	2.4	2.6	.....	4.0	3.5	3.4	3.5	4.0	3.0	2.9
6	.....	3.95	2.4	2.65	.....	4.0	3.5	3.5	3.5	4.0	3.1	3.1
7	.....	3.9	.....	4.7	.....	4.0	3.6	3.6	3.5	4.0	3.1	3.0
8	.....	3.9	2.4	4.6	.....	3.9	3.8	3.7	3.5	4.1	3.1	2.9
9	.....	3.9	3.3	4.6	.....	3.9	3.7	3.7	3.4	4.1	3.1	2.9
10	.....	.....	4.15	4.6	.....	3.9	3.7	3.6	3.4	4.0	3.1	2.9
11	.....	3.8	4.4	4.6	.....	3.9	3.7	3.6	3.5	4.0	3.1	2.9
12	.....	3.0	5.6	4.6	5.6	3.7	3.6	3.6	3.5	3.9	3.1	2.9
13	.....	3.0	5.7	4.0	.....	3.7	3.7	3.5	3.5	3.8	3.2	2.95
14	.....	2.35	5.7	4.0	.....	3.7	3.7	3.5	3.5	3.8	3.2	2.9
15	.....	2.35	5.6	.....	.....	3.7	3.6	3.5	3.6	3.8	3.2	2.7
16	.....	2.4	4.7	.....	.....	3.5	3.6	3.5	4.1	3.8	3.2	2.5
17	.....	2.9	4.0	.....	.....	3.5	3.6	3.5	3.8	3.8	3.1	2.5
18	.....	2.4	2.8	.....	.....	3.5	3.6	3.5	3.6	3.9	3.1	2.5
19	2.3	2.4	2.8	.....	.....	3.5	3.7	3.5	3.5	3.9	3.1	3.5
20	2.5	2.4	2.8	.....	5.0	3.5	3.7	3.5	3.5	3.9	3.1	3.4
21	2.8	.....	5.7	.....	4.4	3.5	3.7	3.5	3.5	3.9	3.1	3.0
22	2.8	2.4	5.7	.....	4.3	3.5	3.8	3.5	3.5	3.9	3.1	2.8
23	2.8	2.35	5.6	.....	3.9	3.4	3.9	3.5	3.5	3.9	3.1	2.5
24	3.2	2.4	4.35	.....	4.0	3.1	4.0	3.5	3.4	3.8	3.1	2.4
25	3.2	2.4	4.35	.....	4.0	3.1	4.0	3.5	3.4	3.7	3.1	2.7
26	3.2	2.4	4.3	4.2	4.0	3.0	4.0	3.5	3.4	3.6	.....	2.8
27	3.2	2.4	4.2	.....	4.0	3.0	4.0	3.5	3.2	3.6	3.6	2.9
28	3.0	2.4	4.2	.....	3.9	3.0	4.0	3.5	3.1	3.5	3.4	2.9
29	4.0	.....	4.2	.....	4.0	3.5	4.0	3.5	3.3	3.4	3.0	2.9
30	4.0	.....	4.2	.....	.....	3.7	4.0	3.5	3.5	3.3	3.1	.....
31	3.9	.....	3.5	.....	.....	.....	3.8	3.4	.....	3.1	.....	.....

NOTE.—Gates closed on Piute reservoir, about 3½ miles above the station, from Jan. 4 to 18 and Dec. 30 to 31, which caused water to fall below gage.

Daily discharge, in second-feet, of Sevier River near Marysvale, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	206	434	159	351	500	480	420	380	360	555	300	280
2	206	445	159	190	500	480	380	380	380	580	300	244
3	108	445	159	190	540	480	380	380	380	580	280	250
4	.....	456	159	190	580	480	380	380	360	580	280	256
5	.....	456	159	190	620	480	380	360	380	480	280	262
6	.....	445	159	198	660	480	380	380	380	480	300	300
7	.....	434	159	620	700	480	400	400	380	480	300	280
8	.....	434	159	595	740	460	440	420	380	505	300	262
9	.....	434	312	595	780	460	420	420	360	505	300	262
10	.....	423	489	595	820	460	420	400	360	480	300	262
11	.....	412	546	595	860	460	420	400	380	480	300	262
12	.....	257	860	595	900	420	400	400	380	460	300	262
13	.....	257	890	456	879	420	420	380	380	440	320	271
14	.....	152	890	456	858	420	420	380	380	440	320	262
15	.....	152	860	460	836	420	400	380	400	440	320	228
16	.....	159	620	463	815	380	400	380	505	440	320	197
17	.....	240	456	467	794	380	400	380	440	440	300	197
18	.....	159	223	471	772	380	400	380	400	460	300	197
19	145	159	223	474	751	380	420	380	380	460	300	380
20	174	159	223	478	730	380	420	380	380	460	300	360
21	223	159	890	482	580	380	420	380	380	460	300	280
22	223	159	890	485	555	380	440	380	380	460	300	244
23	223	152	860	489	460	360	460	380	380	460	300	197
24	293	159	534	493	480	300	480	380	360	440	300	182
25	293	159	534	496	480	300	480	380	360	420	300	228
26	293	159	523	500	480	280	480	380	360	400	350	244
27	293	159	500	500	480	280	480	380	320	400	400	262
28	257	159	500	500	460	280	480	380	300	380	360	262
29	456	.....	500	500	480	380	480	380	340	360	280	262
30	456	.....	500	500	480	420	480	380	380	340	300	.....
31	434	.....	351	.....	480	.....	440	360	.....	300	.....	.....

NOTE.—Daily discharge determined from two fairly well defined rating curves. Gage heights interpolated for days on which gage was not read except Jan. 4 to 18 and Dec. 30 to 31. Relation of gage height to discharge probably not affected by ice during the winter.

Monthly discharge of Sevier River near Marysvale, Utah, for 1911.

[Drainage area, 2,560 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	456	.....	162	0.063	0.07	9,960	D.
February	456	152	278	.109	.11	15,400	B.
March	890	159	466	.182	.21	28,700	B.
April	620	190	452	.177	.20	26,900	B.
May	900	460	647	.253	.29	39,800	B.
June	480	280	405	.158	.18	24,100	A.
July	480	380	426	.167	.19	26,200	B.
August	420	360	384	.150	.17	23,600	A.
September	505	300	377	.147	.16	22,400	B.
October	580	300	457	.179	.21	28,100	B.
November	400	280	307	.120	.13	18,300	B.
December	380	.....	243	.095	.11	14,900	B.
The year	900	.....	385	.150	2.03	278,000	

NOTE.—Discharge Jan. 4 to 18 estimated at 50 second-feet; Dec. 30 to 31 at 50 second-feet.

SEVIER RIVER AT SEVIER, UTAH.

Location.—At the town of Sevier about 100 yards above the railroad bridge on the Y-spur, 50 yards west of the Denver & Rio Grande Railroad main-line track and about 80 yards above the mouth of Clear Creek, in the NE. ¼ SE. ¼ sec. 32, T. 25 S., R. 4 W.

Records available.—May 19 to December 31, 1911.

Drainage area.—2,700 square miles.

Gage.—A vertical staff driven into the stream bed and nailed to an overhanging cottonwood tree.

Channel.—Permanent since station was established.

Discharge measurements.—Made from car and cable.

Winter flow.—Ice does not form at this station.

Diversions.—Very little water is diverted above the station from Sevier River but a number of canals head 2 or 3 miles down stream. These canals irrigate the whole Sevier Valley as far north as Gunnison.

Regulation.—The Piute reservoir, about 27 miles above the station, controls the flow in the river as there is very little inflow between the reservoir and the station.

Accuracy.—Good.

Cooperation.—Maintained in cooperation with the State Land Board.

Discharge measurements of Sevier River at Sevier, Utah, in 1911.

Date.	Hydrographer.	Gage height.	dis-charge.
		Feet.	*Sec.-feet.*
May 20	H. S. Kleinschmidt	2.70	816
27	do	2.20	498
28	do	2.25	510
July 6	do	2.00	408
26	J. J. Hayes	2.26	513
Aug. 3	do	2.00	415
9	do	2.10	439
16	do	2.00	401
24	do	2.00	405
Nov. 26	J. C. Dort	1.90	353

Daily gage height, in feet, of Sevier River at Sevier, Utah, for 1911.

[O. A. Anderson, observer.]

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.4	2.2	2.1	2.0	2.0	1.8	1.75
2		2.4	2.2	2.0	2.0	2.5	1.8	1.75
3		2.4	2.1	2.0	2.0	2.6	1.8	1.7
4		2.4	2.1	2.0	2.0	2.5	1.8	1.7
5		2.4	2.1	2.0	2.0	2.5	1.8	1.7
6		2.5	2.1	2.0	2.0	2.45	1.8	1.7
7		2.5	2.1	2.0	2.0	2.4	1.8	1.7
8		2.5	2.2	2.0	2.0	2.4	1.8	1.7
9		2.5	2.2	2.1	2.0	2.4	1.8	1.65
10		2.5	2.2	2.1	2.0	2.3	1.8	1.65
11		2.5	2.2	2.1	2.0	2.3	1.8	1.6
12		2.5	2.2	2.1	1.9	2.3	1.8	1.6
13		2.4	2.2	2.0	2.0	2.3	1.8	1.55
14		2.4	2.2	2.0	2.0	2.3	1.8	1.55
15		2.4	2.15	2.0	2.0	2.3	1.8	1.55

Daily gage height, in feet, of Sevier River at Sevier, Utah, for 1911—Continued.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
16	.....	2.4	2.1	2.05	2.1	2.3	1.8	1.5
17	.....	2.3	2.1	2.0	2.1	2.25	1.8	1.4
18	.....	2.3	2.1	2.0	2.1	2.15	1.8	1.4
19	2.9	2.3	2.1	2.0	2.05	2.1	1.8	1.4
20	2.7	2.3	2.15	2.0	2.05	2.0	1.8	1.4
21	2.7	2.3	2.4	2.0	2.0	2.0	1.8	1.4
22	2.7	2.3	2.3	2.05	2.0	2.0	1.8	1.4
23	2.6	2.2	2.25	2.1	1.95	2.0	1.8	1.4
24	2.3	2.1	2.25	2.05	1.95	2.0	1.8	1.4
25	2.3	1.9	2.25	2.0	1.9	1.9	1.8	1.4
26	2.3	1.85	2.25	2.0	1.85	1.9	1.8	1.4
27	2.3	1.8	2.25	2.0	1.8	1.8	1.8	1.4
28	2.25	1.8	2.3	2.0	1.8	1.8	1.8	1.4
29	2.3	1.9	2.3	2.0	1.85	1.8	1.8	1.4
30	2.35	2.1	2.3	2.0	1.9	1.8	1.8	1.3
31	2.4	.....	2.25	2.0	.....	1.8	.....	1.2

Daily discharge, in second-feet, of Sevier River at Sevier, Utah, for 1911.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	615	500	450	400	400	315	295
2	.....	615	500	400	400	680	315	295
3	.....	615	450	400	400	750	315	275
4	.....	615	450	400	400	680	315	275
5	.....	615	450	400	400	680	315	275
6	.....	680	450	400	400	648	315	275
7	.....	680	450	400	400	615	315	275
8	.....	680	500	400	400	615	315	275
9	.....	680	500	450	400	615	315	258
10	.....	680	500	450	400	555	315	258
11	.....	680	500	450	400	555	315	240
12	.....	680	500	450	355	555	315	240
13	.....	615	500	400	400	555	315	225
14	.....	615	500	400	400	555	315	225
15	.....	615	475	400	400	555	315	225
16	.....	615	450	425	450	555	315	210
17	.....	555	450	400	450	528	315	190
18	.....	555	450	400	450	475	315	190
19	965	555	450	400	425	450	315	190
20	820	555	475	400	425	400	315	190
21	820	555	615	400	400	400	315	190
22	820	555	555	425	400	400	315	190
23	750	500	528	450	378	400	315	190
24	555	450	528	425	378	400	315	190
25	555	355	528	400	355	355	315	190
26	555	335	528	400	335	355	315	190
27	555	315	528	400	315	315	315	190
28	528	315	555	400	315	315	315	190
29	555	355	555	400	335	315	315	190
30	585	450	555	400	355	315	315	175
31	615	.....	528	400	.....	315	.....	160

NOTE.—Discharge determined from a well-defined rating curve.

Monthly discharge of Sevier River at Sevier, Utah, for 1911.

[Drainage area, 2,700 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
May 19-31	965	528	668	0.247	0.12	17,200	A.
June	680	315	557	.206	.23	33,100	A.
July	615	450	500	.185	.21	30,700	A.
August	450	400	412	.152	.18	25,300	A.
September	450	315	391	.145	.16	23,300	A.
October	750	315	494	.176	.20	30,400	A.
November	315	315	315	.117	.13	18,700	A.
December	295	160	223	.083	.10	13,700	B.
The period						192,000	

SEVIER RIVER NEAR GUNNISON, UTAH.

Location.—At the bridge on the county road leading from Gunnison to West View precinct, about 3 miles west of Gunnison post office, about 60 rods west of the southeast corner of sec. 14, T. 19 S., R. 1 W. San Pitch River flows into the Sevier from the east about half a mile below the station.

Records available.—June 29, 1900, to December 31, 1911.

Drainage area.—3,990 square miles.

Gage.—Vertical staff on right bridge abutment; datum of gage was lowered 1 foot in September, 1910.

Channel.—Somewhat shifting.

Discharge measurements.—Measurements are made from the downstream side of the bridge during high water and by wading at the riffle about 50 yards below the bridge during low water.

Winter flow.—The river freezes from bank to bank for short periods during December and January.

Diversion.—During the irrigation season the greater portion of the stream flow is diverted above the station.

Storage.—There are three storage reservoirs on the headwaters of Sevier River and during certain seasons of the year these reservoirs hold a large portion of the stream flow.

Accuracy.—Records obtained at this station are good.

Cooperation.—Maintained in cooperation with the State of Utah.

Discharge measurements of Sevier River near Gunnison, Utah, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 3[a]	J. C. Dort	2.49	82
Nov. 25	.....do	3.89	504

[a] Wading below gage.

Daily gage height, in feet, of Sevier River near Gunnison, Utah, for 1911.

[Le Roy H. Lund, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.85	4.60	3.50	4.30	1.20	3.35	2.75	2.50	2.55	3.95	4.50	3.90
2	3.85	4.00	3.50	4.00	1.20	3.30	2.15	2.50	2.55	4.00	3.80	3.90
3	4.60	4.30	3.55	3.60	1.20	1.80	2.10	2.50	2.55	4.05	3.70	3.80
4	5.20	4.40	3.60	3.10	1.20	2.00	2.10	2.50	2.55	4.35	3.70	3.70
5	4.75	4.40	3.80	3.10	1.20	2.20	2.15	2.50	2.60	4.35	3.70	3.70
6	4.30	4.60	3.90	3.10	1.20	2.20	2.20	2.50	2.55	4.00	3.70	3.50
7	4.15	4.30	3.80	3.10	1.50	2.20	2.25	2.50	2.65	4.00	3.70	4.30
8	4.20	4.20	3.95	3.10	2.30	2.20	2.30	2.45	2.55	4.00	3.70	4.50
9	4.20	4.20	4.25	2.70	2.70	2.20	2.25	2.45	2.55	4.00	3.70	4.00
10	3.75	3.80	4.25	3.30	2.80	2.15	2.20	2.60	2.55	4.00	3.70	3.90
11	3.55	3.80	3.90	3.35	3.25	2.10	2.20	2.52	2.55	4.15	3.70	3.90
12	3.55	3.80	4.50	3.75	3.85	2.10	2.10	2.45	2.60	4.00	3.70	3.90
13	3.60	3.75	4.25	3.50	3.80	2.10	2.05	2.40	2.60	4.00	3.70	3.80
14	3.75	3.75	4.65	3.50	3.60	2.40	2.08	2.35	2.60	4.00	3.70	3.70
15	3.60	3.80	4.70	3.40	3.70	2.95	2.15	2.25	2.60	4.00	3.70	3.70
16	3.60	3.60	4.75	3.20	3.55	2.75	2.25	2.25	2.60	4.00	3.70	3.60
17	3.40	3.60	5.20	3.20	3.75	2.30	2.30	2.20	2.55	3.95	3.70	3.60
18	3.35	3.60	5.15	2.70	3.55	3.00	2.35	2.20	2.60	3.95	3.70	3.70
19	3.35	3.60	4.70	2.50	3.50	3.00	2.40	2.25	2.70	3.95	3.70	3.95
20	3.35	3.60	5.10	2.50	3.40	3.10	2.40	2.20	2.70	3.90	3.70	3.95
21	3.40	3.60	4.20	2.10	3.40	3.45	2.35	2.20	2.85	3.95	3.85	4.05
22	3.45	3.60	4.70	2.05	3.40	2.90	2.30	2.25	2.85	3.90	3.90	4.15
23	3.50	.....	4.80	2.05	3.30	2.90	2.30	2.30	2.85	4.00	3.90	4.20
24	3.50	3.60	4.80	1.70	3.15	3.10	2.75	2.60	2.85	4.00	3.85	4.20
25	3.50	3.60	4.90	1.50	3.10	3.00	3.00	2.75	2.85	4.00	3.90	4.50
26	3.75	3.50	4.80	1.20	3.10	3.30	2.75	2.85	2.85	3.95	3.90	4.50
27	3.70	3.45	4.85	1.20	3.10	2.90	2.75	2.75	2.85	4.00	3.90	4.70
28	3.60	3.50	4.60	1.20	2.50	2.90	2.60	2.55	2.85	4.00	3.90	5.05
29	4.00	.....	4.45	1.15	2.50	2.80	2.60	2.55	3.00	4.00	3.90	5.05
30	4.20	.....	4.35	1.10	2.40	2.75	2.55	2.60	3.65	4.00	3.85	5.40
31	4.60	.....	4.30	.....	2.40	.....	2.55	2.65	.....	4.00	.....	5.40

NOTE.—Relation of gage height to discharge probably affected by ice Dec. 30 and 31.

Daily discharge, in second-feet, of Sevier River near Gunnison, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	552	760	330	630	1	285	130	80	90	490	715	470
2	552	510	330	510	1	270	34	80	90	510	435	470
3	760	630	348	365	1	13	30	80	90	530	400	435
4	1,050	670	365	215	1	23	30	80	90	650	400	400
5	828	670	435	215	1	38	34	80	100	650	400	400
6	630	760	470	215	1	38	38	80	90	510	400	330
7	570	630	435	215	6	38	43	80	110	510	400	630
8	590	590	490	215	48	38	48	71	90	510	400	715
9	590	590	610	120	120	38	43	71	90	510	400	510
10	418	435	610	270	140	34	38	100	90	510	400	470
11	348	435	470	285	255	30	38	84	90	570	400	470
12	348	435	715	418	452	30	30	71	100	510	400	470
13	365	418	610	330	435	30	26	62	100	510	400	435
14	418	418	782	330	365	62	29	55	100	510	400	400
15	365	435	805	300	400	178	34	43	100	510	400	400
16	365	365	828	240	348	130	43	43	100	510	400	365
17	300	365	1,050	240	418	48	48	38	90	490	400	365
18	285	365	1,020	120	348	190	55	38	100	490	400	400
19	285	365	805	80	330	190	62	43	120	490	400	490
20	285	365	1,000	80	300	215	62	38	120	470	400	490
21	300	365	590	30	300	315	55	38	152	490	452	530
22	315	365	805	26	300	165	48	43	152	470	470	570
23	330	365	850	26	270	165	48	48	152	510	470	590
24	330	365	850	10	228	215	130	100	152	510	452	590
25	330	365	900	6	215	190	190	130	152	510	470	715
26	418	330	850	1	215	270	130	152	152	490	470	715
27	400	315	880	1	215	165	130	130	152	510	470	805
28	365	330	760	1	80	165	100	90	152	510	470	975
29	510	.....	692	.5	80	140	100	90	190	510	470	975
30	590	.....	650	.0	62	130	90	100	382	510	452	975
31	760	.....	630	.....	62	.....	90	110	.....	510	.....	975

NOTE.—Daily discharge determined from a rating curve fairly well defined above 70 second-feet. Discharge Dec. 30-31 estimated on account of ice.

Monthly discharge of Sevier River near Gunnison, Utah, for 1911.

[Drainage area, 3,990 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	1,050	285	469	0,118	0.14	28,800	B.
February	760	315	465	.117	.12	25,800	B.
March	1,050	330	676	.169	.19	41,600	B.
April	630	0	183	.046	.05	10,900	B.
May	452	1	194	.049	.06	11,900	B.
June	315	13	128	.032	.04	7,620	B.
July	190	26	64.7	.016	.02	3,980	B.
August	152	38	75.7	.019	.02	4,650	B.
September	382	90	125	.031	.03	7,440	B.
October	650	470	515	.129	.15	31,700	B.
November	715	400	433	.109	.12	25,800	B.
December	975	330	565	.142	.16	34,700	B.
The year	1,050	0	325	.082	1.10	235,000	

SEVIER RIVER NEAR JUAB, UTAH.

Location.—About 1,000 feet downstream from the Sevier Bridge dam, about 14 miles southwest of Juab, Utah, in the NE. ¼ sec. 2, T. 17 S., R. 2 W., Salt Lake base and meridian.

Records available.—September 23 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Inclined gage on right bank; datum unchanged.

Channel.—Probably permanent.

Discharge measurements.—Made from car and cable during medium to high water and by wading at low stages of the river.

Winter flow.—No ice forms at this station.

Diversions.—The entire outflow of the Sevier Bridge reservoir passes the station. There are no diversions near the station.

Regulation.—The flow in the river is absolutely controlled by the gates in the dam just above the station.

Cooperation.—Maintained in cooperation with Delta Land & Water Co., Mellville & Desert Irrigation Co., and State of Utah.

Daily gage height, in feet, of Sevier River near Juab, Utah, for 1911.

[F. M. Fisher, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	3.13	1.62	1.56	11	3.31	1.55	1.72	21	1.75	1.56	3.15
2	3.16	1.62	1.56	12	3.32	1.55	1.72	22	1.75	1.56	3.15
3	3.18	1.62	1.56	13	3.33	1.55	1.72	23	1.75	1.56	3.15
4	3.18	1.62	1.72	14	1.35	1.55	2.72	24	1.62	1.56	3.60
5	3.20	1.55	1.72	15	1.55	1.55	2.72	25	1.62	1.56	3.60
6	3.22	1.55	1.72	16	1.64	1.55	2.72	26	1.62	1.56	3.60
7	3.24	1.55	1.72	17	1.75	1.55	2.72	27	1.62	1.56	3.60
8	3.26	1.55	1.72	18	1.75	1.55	2.72	28	1.62	1.56	4.05
9	3.28	1.55	1.72	19	1.75	1.56	3.15	29	1.62	1.56	4.05
10	3.30	1.55	1.72	20	1.75	1.56	3.15	30	1.62	1.56	4.05
								31	1.62		4.05

BEAVER RIVER AT MINERSVILLE, UTAH.

Location.—About 2 miles below Minersville canal, half a mile northwest of the business district of Minersville, and below all tributaries, Indian Creek, North Creek, and South Creek entering 10, 12, and 15 miles, respectively, above the station. It is 80 rods east and 60 rods north of the southwest corner of sec. 1, T. 30 S., R. 10 W., Salt Lake base and meridian.

Records available.—April 13, 1909, to December 31, 1911.

Drainage area.—549 square miles.

Gage.—Inclined staff; datum unchanged.

Channel.—Practically permanent.

Discharge measurements.—Made from a footbridge near gage.

Winter flow.—Ice forms at this station.

Diversions.—All of the water is diverted from the creek above the station during the irrigation season.

Regulations.—There is a storage reservoir just above Minersville, where a large part of the flow of the creek is impounded, and only the excess water flows past the station.

Accuracy.—The discharge curve is well defined by the measurements and the record may be considered good.

Cooperation.—Maintained in cooperation with State of Utah.

The following discharge measurement was made by G. C. Baldwin.

May 16, 1911: Gage height, 2.05 feet; discharge, 20.1 second-feet.

Daily gage height, in feet, of Beaver River at Minersville, Utah, for 1911.

[Tus Gillins, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.35	2.55	2.5	2.15	.....	.....	.....	.....	.....	1.65	2.2	2.4
2	2.45	2.55	2.5	2.45	.....	.....	.....	.....	.....	.....	2.2	2.4
3	2.45	2.45	2.5	2.45	.....	.....	.....	.....	.....	.....	2.2	2.4
4	2.45	2.45	2.5	2.5	.....	.....	.....	.....	.....	2.1	2.2	2.4
5	2.45	2.45	2.5	2.5	.....	.....	.....	.....	.....	2.2	2.3	2.5
6	2.45	2.45	2.5	2.5	.....	.....	.....	.....	.....	2.2	2.3	2.5
7	2.45	2.45	2.5	2.5	2.4	.....	.....	.....	.....	2.2	2.3	2.5
8	2.45	2.45	2.6	2.5	2.55	.....	.....	.....	.....	2.1	2.3	2.4
9	2.75	2.45	2.6	2.45	2.55	.....	.....	.....	.....	2.1	2.3	2.4
10	3.1	2.45	2.5	2.45	2.55	.....	.....	.....	.....	2.1	2.3	2.4
11	3.1	2.45	2.5	1.85	2.45	.....	.....	.....	.....	2.05	2.3	2.5
12	2.45	2.45	2.5	1.85	2.35	.....	.....	.....	.....	2.05	2.7	2.4
13	2.45	2.45	2.5	1.85	2.25	.....	.....	.....	.....	2.05	2.5	2.4
14	2.45	2.45	2.5	1.75	2.25	.....	.....	.....	.....	2.1	2.5	2.4
15	2.45	2.45	2.5	1.75	2.1	.....	.....	.....	.....	2.1	2.5	2.4
16	2.45	2.45	2.25	.....	2.05	.....	.....	.....	.....	2.1	2.5	2.4
17	2.45	2.5	2.3	.....	.....	.....	.....	.....	.....	2.1	2.5	2.4
18	2.45	2.5	2.3	.....	.....	.....	.....	.....	.....	2.0	2.5	2.4
19	2.45	2.5	2.3	.....	.....	.....	.....	.....	.....	2.1	2.5	2.4
20	2.45	2.5	2.3	.....	.....	.....	.....	.....	.....	2.1	2.5	2.4
21	2.45	2.5	2.4	.....	.....	.....	.....	.....	.....	2.1	2.5	2.4
22	2.45	2.5	2.4	.....	.....	.....	.....	.....	.....	2.1	2.5	2.4
23	2.45	2.5	2.4	.....	.....	.....	.....	.....	.....	2.0	2.35	2.4
24	2.45	2.5	2.4	.....	1.85	.....	.....	.....	.....	2.2	2.45	2.4
25	2.45	2.5	2.4	.....	2.25	.....	.....	.....	.....	2.2	2.4	2.4
26	2.7	2.5	2.4	.....	2.3	.....	.....	.....	.....	2.2	2.4	2.55
27	2.5	2.5	2.4	.....	2.15	.....	.....	.....	.....	2.2	2.4	2.75
28	2.45	2.5	2.4	.....	1.8	.....	.....	.....	.....	2.2	2.4	2.65
29	2.45	.....	2.1	.....	.....	.....	.....	.....	.....	2.2	2.4	2.6
30	2.45	.....	2.1	.....	.....	.....	.....	.....	.....	2.2	2.4	2.6
31	2.55	.....	2.15	.....	.....	.....	.....	.....	.....	2.2	.....	2.6

Daily discharge, in second-feet, of Beaver River at Minersville, Utah, for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	42	62	57	26	.....	.....	.....	.....	.....	1	30	47
2	52	62	57	52	.....	.....	.....	.....	.....	.....	30	47
3	52	52	57	52	.....	.....	.....	.....	.....	.....	30	47
4	52	52	57	57	.....	.....	.....	.....	.....	23	30	47
5	52	52	57	57	.....	.....	.....	.....	.....	30	38	57
6	52	52	57	57	.....	.....	.....	.....	.....	30	38	57
7	52	52	57	57	47	.....	.....	.....	.....	30	38	57
8	52	52	68	57	62	.....	.....	.....	.....	23	38	47
9	86	52	68	52	62	.....	.....	.....	.....	23	38	47
10	138	52	57	52	62	.....	.....	.....	.....	23	38	47
11	138	52	57	8.5	52	.....	.....	.....	.....	20	38	57
12	52	52	57	8.5	42	.....	.....	.....	.....	20	80	47
13	52	52	57	8.5	34	.....	.....	.....	.....	20	57	47
14	52	52	57	4.0	34	.....	.....	.....	.....	23	57	47
15	52	52	57	4.0	23	.....	.....	.....	.....	23	57	47
16	52	52	34	.....	20	.....	.....	.....	.....	23	57	47
17	52	57	38	.....	.....	.....	.....	.....	.....	23	57	47
18	52	57	38	.....	.....	.....	.....	.....	.....	17	57	47
19	52	57	38	.....	.....	.....	.....	.....	.....	23	57	47
20	52	57	38	.....	.....	.....	.....	.....	.....	23	57	47
21	52	57	47	.....	.....	.....	.....	.....	.....	23	57	47
22	52	57	47	.....	.....	.....	.....	.....	.....	23	57	47
23	52	57	47	.....	.....	.....	.....	.....	.....	17	42	47
24	52	57	47	.....	8.5	.....	.....	.....	.....	30	52	47
25	52	57	47	.....	34	.....	.....	.....	.....	30	47	47
26	80	57	47	.....	38	.....	.....	.....	.....	30	47	47
27	57	57	47	.....	26	.....	.....	.....	.....	30	47	47
28	52	57	47	.....	6	.....	.....	.....	.....	30	47	47
29	52	.....	23	.....	.....	.....	.....	.....	.....	30	47	47
30	52	.....	23	.....	.....	.....	.....	.....	.....	30	47	47
31	52	.....	26	.....	.....	.....	.....	.....	.....	30	.....	47

NOTE.—Discharge determined from a fairly well defined rating curve. Water standing in pools Apr. 16 to May 6 and May 17 to 23. Creek dry May 29 to Sept. 30 and Oct. 2 and 3. Discharge estimated Dec. 26–31 on account of ice.

Monthly discharge of Beaver River at Minersville, Utah, for 1911.

[Drainage area, 549 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	138	42	59.7	0.109	0.13	3,670	C.
February	62	52	54.9	.100	.10	3,050	C.
March	68	23	48.7	.089	.10	2,990	C.
April	57	0	18.4	.034	.04	1,090	C.
May	62	0	17.8	.032	.04	1,090	C.
June	.....	.....	.0	.....	.....	.....	
July	.....	.....	.0	.....	.....	.....	
August	.....	.....	.0	.....	.....	.....	
September	.....	.....	.0	.....	.....	.....	
October	30	0	22.6	.041	.05	1,390	C.
November	80	30	47.1	.086	.10	2,800	C.
December	57	47	48.3	.088	.10	2,970	C.
The year	138	0	26.3	.048	.66	19,000	

NOTE.—Accuracy of estimates rated low because of errors in gage reading caused by displacement of gage.

THOUSAND SPRINGS CREEK BASIN.

THOUSAND SPRINGS CREEK NEAR TECOMA, NEV.

Location.—In the SE. ¼ sec. 31, T. 43 N., R. 67 E., Mount Diablo base and meridian, about three-fourths of a mile below the junction of Rock Springs and Thousand Springs creeks, one-fourth of a mile below the mouth of the canyon and about 1½ miles from the lower H. D. ranch, which is 30 miles from Tecoma, Nev.

Records available.—November 1, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Inclined gage for low water; vertical staff gage for high water; datum remained unchanged to November 19, 1911. Automatic gage installed November 20, 1911; datum raised 0.03 foot above zero of inclined gage.

Channel.—Liable to shift at high stages.

Discharge measurements.—Made by wading just below gage at low stages and from a car and cable at high stages.

Winter flow.—If there is any flow during the winter the creek will freeze entirely over, sometimes even to the bottom. The creek generally dries up in July and there is no more water until the snow begins to melt in the early spring.

Diversions.—Thousand Springs Creek is used more or less for irrigation but most of this water finds its way back to the main channel. During the summer the creek sinks at a point several miles above the lower H. D. ranch.

Accuracy.—Low, as all measurements were made at low stages.

Discharge measurements of Thousand Springs Creek near Tecoma, Nev., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 25	J. C. Dort	2.40	72.8
26	do	2.30	65.3
26	do	1.85	49.6
27	do	1.75	31.7
27	do	1.80	41.8
May 2	G. C. Baldwin	1.25	24.1
2	do	1.19	21.9

Daily gage height, in feet, of Thousand Springs Creek near Tecoma, Nev., for 1911.

[Samuel Gelston, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1	.....	6.7	1.5	1.7	1.2	.....	.....	16	.....	1.0	2.3	1.4	1.5	.....	.....
2	0.5	4.9	1.5	1.7	1.22	0.7	0.4	17	.....	.9	2.0	1.2	1.3	0.5	.....
3	.....	2.8	1.6	1.7	1.2	.6	.....	18	.....	.8	1.8	1.1	1.1	.....	0.1
4	.....	1.6	1.8	1.9	1.1	.6	.4	19	.....	1.1	1.7	1.1	1.0	.6	.....
5	.5	1.5	2.0	2.0	1.1	.6	.....	20	.....	1.3	1.9	.9	1.0	.....	2.3
6	.....	1.5	5.2	1.9	1.0	.5	.3	21	.....	1.0	2.0	1.2	1.0	.5	.3
7	.....	1.0	5.7	1.8	.9	.5	.....	22	.....	1.3	2.2	1.2	1.0	.....	.....
8	.6	1.1	9.4	1.7	1.0	.45	.2	23	0.5	1.3	2.3	.....	.9	.4	.....
9	.....	1.0	6.1	1.8	1.2	.4	.....	24	.....	1.2	2.5	.....	.9	.....	.....
10	.....	.9	4.7	1.7	1.0	.35	.15	25	3.5	1.3	2.4	.8	.8	.3	.1
11	.....	1.0	3.4	1.5	1.0	.35	.....	26	5.2	1.2	2.08	.9	.9	.....	.....
12	.6	.9	2.3	1.5	1.2	.....	.1	27	3.1	1.2	1.78	.9	.9	.3	.05
13	.....	1.2	2.3	1.4	1.2	.4	.....	28	2.4	1.3	1.5	1.0	.9	.....	.....
14	.....	1.1	2.1	1.7	1.7	.....	.....	29	2.0	.....	1.8	1.2	.8	.2	.....
15	.5	1.1	2.2	1.6	1.6	.4	.1	30	5.6	.....	1.8	1.1	.8	.3	.....
								31	8.0	.....	1.9	.....	.8	.....	.....

NOTE.—Creek frozen Jan. 1 to 23, 1911. Creek dry August to December.

Daily discharge, in second-feet, of Thousand Springs Creek near Tecoma, Nev., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1	.....	453	31	39	22	10	2.5	16	.....	16	66	28	31	4	.....
2	.....	259	31	39	23	9	3	17	.....	13	51	22	25	5	.....
3	.....	94	35	39	22	7	3	18	.....	11	43	19	19	6	.....
4	.....	35	43	47	19	7	3	19	.....	19	39	19	16	7	.....
5	.....	31	51	51	19	7	2.5	20	.....	25	47	13	16	6	66
6	.....	31	289	47	16	5	2	21	.....	16	51	22	16	5	2
7	.....	16	343	43	13	5	1.5	22	.....	25	61	22	16	4	.....
8	.....	19	776	39	16	4	1	23	.....	25	66	18	13	3	.....
9	.....	16	387	43	22	3	.08	24	70	22	76	15	13	2.5	.....
10	.....	13	239	39	16	2.5	.05	25	140	25	71	11	11	2	.....
11	.....	16	133	31	16	2.5	.....	26	289	22	55	13	13	2	.....
12	.....	13	66	31	22	2.8	.....	27	112	22	42	13	13	2	.....
13	.....	22	66	28	22	3	.....	28	71	25	31	16	13	1.5	.....
14	.....	19	56	39	39	3	.....	29	51	.....	43	22	11	1	.....
15	.....	19	61	35	35	3	.....	30	332	.....	43	19	11	2	.....
								31	608	.....	47	.....	11	.....	.....

NOTE.—Discharge determined from a rating curve fairly well-defined between 15 and 100 second-feet. Probably zero flow Jan. 1 to 23, July 11 to 19, and July 22 to 31. Discharge interpolated on other days when gage was not read.

Monthly discharge of Thousand Springs Creek near Tecoma, Nev., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	608	0	54.0	3,320	D.
February	453	11	47.2	2,620	C.
March	776	31	111	6,820	C.
April	51	11	28.7	1,710	B.
May	39	11	18.4	1,130	C.
June	10	1	4.23	252	D.
July	66	0	2.83	174	D.
August	.....	.....	0	0	
September	.....	.....	0	0	
October	.....	.....	0	0	
November	.....	.....	0	0	
December	.....	.....	0	0	
The year	776	0	22.1	16,000	

SALTON SINK BASIN.

SALTON SEA NEAR SALTON, CAL.

Location.—At a trestle bent across Salt Creek about 2½ miles east of Salton, Cal.

Records available.—November, 1904, to December 31, 1911.

Gage.—A graduated trestle bent; datum of gage 280.3 feet below sea level, Southern Pacific Co.'s datum, or 273.5 feet below sea level as determined from United States Geological Survey bench marks. The gage height records kept by the New Liverpool Salt Co. from November, 1904, to February 26, 1906, show the actual depth of water above the lowest portion of the sink. On February 23, 1906, the Government installed a gage at the same datum as that of the Salt Co. gage about half a mile west of Salton railway station and 3 miles southeast of the old Salton station. This gage was destroyed by waves and the present gage has since been used.

Practically all the water now received from Salton Sea enters through Alamo and New rivers, chiefly through the former. These rivers run through Imperial Valley and are drainage channels for excess and waste waters from the irrigation system and from the power plants.

Daily depth, in feet, of Salton Sea near Salton, Cal., for 1911.

[V. H. Jones, William Kellams, and John Martin, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	58.44	58.23	58.14	58.01	57.61	57.10	56.50	56.23	55.81	55.20	54.57	54.28
2	58.44	58.23	58.14	58.00	57.60	57.08	56.49	56.21	55.82	55.16	54.55	54.27
3	58.43	58.25	58.13	57.99	57.59	57.05	56.47	56.20	55.80	55.12	54.54	54.27
4	58.42	58.30	58.13	57.98	57.57	57.03	56.46	56.19	55.79	55.09	54.52	54.26
5	58.41	58.29	58.12	57.97	57.55	57.00	56.44	56.17	55.78	55.06	54.51	54.26
6	58.40	58.28	58.12	57.96	57.54	56.98	56.43	56.15	55.77	55.03	54.50	54.26
7	58.39	58.26	58.12	57.96	57.53	56.96	56.42	56.14	55.76	54.98	54.49	54.25
8	58.39	58.25	58.11	57.95	57.52	56.95	56.41	56.12	55.74	54.96	54.48	54.24
9	58.38	58.23	58.11	57.94	57.51	56.92	56.40	56.10	55.71	54.95	54.46	54.24
10	58.38	58.23	58.10	57.93	57.51	56.90	56.39	56.08	55.70	54.93	54.44	54.24
11	58.38	58.23	58.10	57.92	57.49	56.89	56.38	56.06	55.66	54.91	54.42	54.24
12	58.37	58.23	58.10	57.90	57.48	56.87	56.37	56.05	55.64	54.90	54.42	54.23
13	58.37	58.23	58.10	57.88	57.47	56.86	56.35	56.03	55.61	54.88	54.41	54.23
14	58.36	58.22	58.09	57.87	57.45	56.85	56.34	56.01	55.68	54.86	54.41	54.23
15	58.34	58.22	58.09	57.85	57.43	56.84	56.33	55.99	55.54	54.84	54.40	54.22
16	58.33	58.22	58.09	57.85	57.40	56.82	56.31	55.97	55.52	54.81	54.34	54.22
17	58.31	58.22	58.08	57.84	57.38	56.80	56.30	55.95	55.51	54.79	54.38	54.21
18	58.30	58.22	58.08	57.83	57.35	56.78	56.29	55.93	55.50	54.77	54.37	54.21
19	58.29	58.21	58.08	57.82	57.33	56.76	56.28	55.91	55.48	54.76	54.36	54.20
20	58.28	58.20	58.07	57.82	57.30	56.75	56.28	55.90	55.47	54.75	54.35	54.19
21	58.26	58.20	58.07	57.81	57.29	56.73	56.30	55.89	55.45	54.74	54.34	53.94
22	58.26	58.19	58.06	57.80	57.27	56.71	56.32	55.88	55.43	54.73	54.33	54.20
23	58.26	58.18	58.06	57.78	57.25	56.69	56.32	55.88	55.40	54.72	54.33	54.17
24	58.25	58.17	58.05	57.75	57.24	56.67	56.32	55.88	55.38	54.71	54.31	54.16
25	58.25	58.17	58.05	57.73	57.22	56.65	56.31	55.88	55.36	54.69	54.30	54.15
26	58.25	58.16	58.05	57.70	57.21	56.62	56.30	55.88	55.32	54.68	54.30	54.15
27	58.24	58.15	58.04	57.67	57.19	56.60	56.29	55.87	55.30	54.66	54.29	54.14
28	58.24	58.15	58.04	57.65	57.17	56.58	56.28	55.86	55.27	54.64	54.29	54.13
29	58.24	.....	58.03	57.63	57.15	56.55	56.27	55.85	55.25	54.63	54.29	54.12
30	58.24	.....	58.03	57.62	57.13	56.52	56.26	55.84	55.22	54.61	54.28	54.11
31	58.23	.....	58.02	.....	57.12	.....	56.24	55.83	.....	54.60	.....	54.10

Fluctuations of surface of Salton Sea near Salton, Cal., for 1904–1911.

Month.	1904		1905		1906		1907	
	Monthly change.	Total rise.	Monthly change.	Total rise.	Monthly change.	Total rise.	Monthly change.	Total rise.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
January	.....	.....	1.4	2.2	1.1	23.8	2.8	75.3
February	.....	.....	1.6	3.8	1.8	25.6	.7	76.0
March	.....	.....	.8	4.6	2.7	28.3	− .1	75.9
April	.....	.....	1.2	5.8	5.6	33.9	− .3	75.6
May	.....	.....	1.0	6.8	8.6	42.5	− .5	75.1
June	.....	.....	2.2	9.0	15.4	57.9	− .4	74.7
July	.....	.....	4.4	13.4	8.6	66.5	− .2	74.5
August	.....	.....	2.2	15.6	2.9	69.4	− .3	74.2
September	.....	.....	1.2	16.8	.9	70.3	− .7	73.5
October	.....	.....	1.4	18.2	1.2	71.5	− .4	73.1
November	0.6	.....	1.6	19.8	− .2	71.3	− .5	72.6
December	.2	0.8	2.9	22.7	1.2	72.5	− .3	72.3

Month.	1908		1909		1910		1911	
	Monthly change.	Total rise.	Monthly change.	Total rise.	Monthly change.	Total rise.	Monthly change.	Total rise.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
January	0.0	72.3	0.0	67.4	0.0	63.4	−0.22	58.23
February	− .1	72.2	− .15	67.25	− .2	63.2	− .08	58.15
March	− .2	72.0	− .25	67.0	− .25	62.95	− .13	58.02
April	− .4	71.6	− .3	66.7	− .3	62.65	− .40	57.62
May	− .6	71.0	− .4	66.3	− .5	62.15	− .50	57.12
June	− .5	70.5	− .4	65.9	− .65	61.5	− .60	56.52
July	− .5	70.0	− .6	65.3	− .45	61.05	− .28	56.24
August	− .6	69.4	− .05	65.25	− .65	60.4	− .41	55.83
September	− .8	68.6	− .5	64.75	− .7	59.7	− .61	55.22
October	− .7	67.9	− .55	64.2	− .55	59.15	− .62	54.60
November	− .3	67.6	− .55	63.65	− .3	58.85	− .32	54.28
December	− .2	67.4	− .25	63.4	− .4	58.45	− .18	54.10

ALAMO RIVER NEAR BRAWLEY, CAL.

Location.—At highway bridge in sec. 31, T. 13 S., R. 15 E., about 3½ miles east of Brawley.

Records available.—1908 to December 31, 1911. Gage observations were begun on June 24, 1909. This station was discontinued early in January, 1912.

Gage.—Vertical staff on left abutment of bridge.

Channel.—Sand and clay; shifting.

Discharge measurements.—Made from car and cable 100 feet below gage.

Cooperation.—This station is maintained by P. L. Sherman, jr., Los Angeles, Cal.

Estimates have not been prepared for 1911, as no discharge measurements were made during the year.

Daily gage height, in feet, of Alamo River near Brawley, Cal., for 1911.

[Mrs. Flora Helman, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.7	5.1	4.0	4.0	5.3	5.6	.....	6.0	4.8	5.8	6.6	6.2
2	.....	5.3	4.4	5.0	5.4	5.4	5.5	5.6	4.6	5.5	6.5	6.4
3	5.8	5.4	4.2	4.9	5.4	5.5	.....	5.2	4.5	5.7	6.7	6.5
4	5.6	5.8	4.3	4.8	5.4	5.6	.....	5.3	4.8	5.4	6.6	6.8
5	5.4	6.0	4.3	5.0	5.4	5.7	5.6	5.5	4.6	5.5	7.0	6.5
6	5.3	6.2	4.4	5.0	5.3	5.5	5.6	5.3	4.1	5.5	7.1	6.4
7	5.4	6.0	4.2	4.9	5.0	5.4	5.5	5.5	4.9	5.6	7.2	6.5
8	5.3	6.0	4.3	5.1	5.1	5.5	5.9	5.6	4.7	5.2	7.1	6.5
9	5.4	6.3	4.3	5.2	5.0	5.4	6.0	5.5	5.0	5.6	7.0	6.3
10	5.0	6.2	4.3	5.5	4.6	5.7	5.9	5.0	4.8	5.8	6.8	6.5
11	5.5	6.0	4.2	5.3	4.4	5.5	5.8	4.9	4.5	5.8	5.7	6.3
12	5.6	5.7	4.0	4.8	4.0	5.5	6.0	4.7	4.2	5.6	5.5	6.2
13	5.4	5.4	4.0	4.0	4.0	5.4	6.1	4.9	3.9	5.5	5.5	6.3
14	5.4	5.1	4.0	4.1	4.5	5.5	6.2	4.8	4.0	5.3	5.7	6.0
15	5.5	6.0	3.9	3.7	4.8	5.7	6.4	4.9	4.5	6.0	6.1	6.5
16	5.7	4.8	3.7	4.0	4.4	5.8	5.0	4.9	5.0	5.8	6.7	6.4
17	5.5	5.6	3.7	4.1	5.0	5.5	4.5	4.7	4.7	6.0	6.3	6.8
18	5.4	5.5	3.8	4.2	5.5	5.3	4.5	4.4	5.1	5.7	6.3	6.9
19	5.6	5.3	4.0	3.5	5.3	5.4	.....	4.6	4.9	5.8	6.8	6.7
20	5.7	5.1	4.0	3.7	5.2	5.5	6.2	4.7	4.6	5.5	6.4	6.5
21	5.6	5.2	3.9	4.5	5.5	5.4	6.0	4.5	4.8	5.8	6.3	6.3
22	5.5	4.5	3.6	4.4	5.7	5.3	.....	4.4	5.0	6.0	6.5	6.0
23	5.6	4.3	4.0	4.3	5.5	5.1	.....	4.2	5.4	6.1	5.8	5.8
24	5.3	4.2	4.1	4.4	5.6	5.3	.....	4.2	5.0	6.2	5.5	5.7
25	5.2	4.5	4.0	4.6	5.7	4.9	6.8	4.0	5.2	6.0	6.0	6.0
26	5.4	4.3	4.2	4.5	5.6	5.3	6.6	4.2	5.0	5.8	6.1	6.1
27	5.5	4.5	4.4	4.8	5.5	5.5	6.5	4.1	5.0	6.0	6.2	5.8
28	5.5	4.2	4.4	4.5	5.6	5.4	6.5	4.3	5.2	6.1	6.2	5.6
29	5.2	.....	4.1	4.7	5.5	6.0	6.5	4.2	5.5	6.2	5.8	5.5
30	5.5	.....	4.2	5.0	5.5	5.9	6.5	4.4	5.6	6.5	6.0	5.5
31	5.4	.....	4.1	.....	5.4	.....	6.5	4.5	.....	6.1	.....	5.7

OWENS LAKE BASIN.

OWENS RIVER NEAR ROUND VALLEY, CAL.

Location.—At footbridge in sec. 10, T. 6 S., R. 31 E., 700 feet above the mouth of Rock Creek and 2 miles north of Round Valley.

Records available.—August 4, 1903, to December 31, 1911.

Drainage area.—Approximately 450 square miles.

Gage.—Vertical staff on left bank, in use since May 29, 1907. The datum differs from that of the previous gage, which was located 100 feet above the present one.

Channel.—Rock and bowlders; fairly permanent.

Discharge measurements.—Made from car and cable at the gage.

Diversions.—No ditches take out water above the gage, but several divert from the main river and its tributaries below the station.

Accuracy.—Discharge measurements are somewhat scattering and an average rating curve has been used. Results are considered reliable.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Owens River near Round Valley, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 25	G. T. Peckema	2.15	206
Mar. 12	C. H. Lee	2.20	220
May 5	do	2.45	288
June 26	do	3.40	757
July 7	do	3.82	919
Aug. 3	J. E. Jones	2.92	466
24	do	2.50	342
Sept. 20	do	2.30	232
Oct. 24	do	2.25	250
Nov. 22	do	2.18	223
Dec. 13	do	2.10	201

Daily gage height, in feet, of Owens River near Round Valley, Cal., for 1911.

[L. L. Roberts, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.95	2.60	2.15	2.60	2.53	2.75	.....	3.40	2.50	2.30	.....	.....
2	.....	.....	.....	.....	.....	.....	3.45	.....	.....	.....	2.25	2.18
3	1.95	2.40	2.10	2.65	2.40	2.85	3.45	3.45	2.40	2.30	.....	.....
4	.....	.....	.....	.....	.....	.....	.....	2.92	2.40	.....	.....	2.10
5	2.00	2.40	2.15	2.70	2.45	2.90	3.75	3.35	.....	2.33	2.30	.....
6	.....	.....	.....	.....	.....	.....	3.80	.....	2.35	2.30	.....	2.15
7	1.95	2.35	2.20	2.60	2.40	2.85	3.80	3.40	.....	2.25	2.25	.....
8	.....	.....	.....	.....	2.40	2.90	3.83	.....	2.35	2.30	.....	2.10
9	.....	2.25	2.60	2.50	.....	.....	.....	3.20	.....	.....	2.25	.....
10	2.10	.....	2.20	.....	2.40	2.90	3.75	.....	2.30	2.23	.....	2.13
11	.....	2.20	.....	2.30	2.40	2.95	.....	3.23	.....	.....	2.25	.....
12	2.00	.....	2.20	.....	.....	.....	3.80	.....	2.35	2.30	.....	2.10
13	.....	2.20	.....	2.25	2.45	2.95	3.73	2.90	.....	.....	2.30	2.10
14	2.10	.....	2.23	.....	2.40	3.00	.....	.....	2.35	2.30	.....	2.13
15	2.00	2.25	.....	2.30	.....	.....	4.00	3.00	.....	2.30	2.15	.....
16	.....	.....	2.15	.....	2.45	3.20	3.93	.....	2.35	2.30	.....	2.10
17	2.10	2.15	2.20	2.35	2.45	3.40	.....	2.85	.....	2.30	2.19	2.10
18	.....	.....	2.15	.....	.....	3.70	3.95	2.90	2.35	.....	.....	.....
19	2.05	2.20	.....	2.40	2.55	3.77	.....	.....	.....	2.30	2.20	2.13
20	.....	.....	2.25	.....	.....	.....	3.65	2.75	2.30	.....	.....	.....
21	2.10	2.10	.....	2.45	2.50	3.95	.....	.....	.....	2.30	2.15	2.10
22	2.00	.....	2.30	.....	2.60	.....	3.70	2.80	2.30	.....	2.18	.....
23	.....	2.10	2.40	2.50	.....	3.80	.....	.....	.....	2.25	.....	2.10
24	2.10	.....	2.40	.....	2.70	3.80	3.55	2.70	2.30	.....	2.10	2.13
25	2.15	2.10	.....	2.55	.....	.....	.....	.....	.....	2.30	.....	.....
26	2.00	2.15	2.50	.....	2.70	3.60	3.50	2.60	2.30	.....	2.15	.....
27	2.10	.....	.....	2.53	.....	.....	.....	.....	.....	2.20	.....	2.10
28	.....	2.10	2.50	.....	2.75	3.55	3.50	2.50	2.33	.....	2.20	2.13
29	.....	.....	.....	2.55	.....	.....	.....	2.55	.....	2.25	.....	.....
30	2.60	.....	2.60	2.50	2.70	3.40	3.53	.....	2.30	.....	2.15	2.10
31	.....	.....	2.55	.....	.....	.....	.....	2.45	.....	2.20	.....	.....

NOTE.—Relation of gage height to discharge probably not affected by ice during the winter months.

Daily discharge, in second-feet, of Owens River near Round Valley, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	164	355	213	355	328	418	742	730	317	253	233	217
2	164	319	206	365	356	440	755	742	300	253	240	221
3	164	283	200	375	283	462	755	755	283	253	244	210
4	170	283	206	385	292	474	834	494	283	258	248	200
5	176	283	213	395	300	485	912	705	276	262	253	206
6	170	276	220	375	292	474	940	718	268	253	246	213
7	164	268	226	355	283	462	940	730	268	240	240	206
8	176	254	290	336	283	485	956	680	268	253	240	200
9	188	240	355	317	283	485	934	630	260	244	240	204
10	200	233	226	285	283	485	912	638	253	234	240	208
11	188	226	226	253	283	508	1,020	645	260	244	240	204
12	176	226	226	246	292	508	940	565	268	253	246	200
13	188	226	230	240	300	508	902	485	268	253	253	200
14	200	233	234	246	283	530	976	508	268	253	233	208
15	176	240	224	253	292	580	1,050	530	268	253	213	204
16	188	226	213	260	300	630	1,010	496	268	253	218	200
17	200	213	226	268	300	730	1,020	462	268	253	223	200
18	194	220	213	276	318	885	1,020	485	268	253	224	204
19	188	226	226	283	336	924	939	452	260	253	226	208
20	194	213	240	292	326	972	858	418	253	253	220	204
21	200	200	246	300	317	1,020	872	429	253	253	213	200
22	176	200	253	308	355	1,080	885	440	253	246	221	200
23	188	200	283	317	375	940	845	418	253	240	210	200
24	200	200	283	326	395	940	805	395	253	246	200	208
25	213	200	300	336	395	885	792	375	253	253	206	206
26	176	213	317	332	395	830	780	355	253	240	213	204
27	200	206	317	328	406	780	780	336	258	226	220	200
28	240	200	317	332	418	805	780	317	262	233	226	208
29	300	.....	336	336	406	768	788	336	258	240	220	204
30	355	.....	355	317	395	730	795	318	253	233	213	200
31	420	.....	336	.....	406	.....	762	300	.....	226	.....	200

NOTE.—Daily discharge determined from a fairly well-defined curve. Discharge Jan. 28, 29, and 31, June 22 and 27, and July 11 estimated from climatologic reports and records of discharge of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Owens River near Round Valley, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	420	164	203	12,500	B.
February	355	200	238	13,200	B.
March	355	200	257	15,800	B.
April	395	240	313	18,600	B.
May	418	283	331	20,400	B.
June	1,080	418	674	40,100	A.
July	1,050	742	881	54,200	A.
August	755	300	512	31,500	A.
September	317	253	257	15,300	B.
October	262	226	247	15,200	B.
November	253	200	229	13,600	B.
December	221	200	205	12,600	B.
The year	1,080	164	364	263,000	

OWENS RIVER NEAR TINEMAHA, CAL.

Location.—At Charlies Butte, in sec. 2, T. 11 S., R. 34 E., about 7 miles south of Tinemaha.

Records available.—September 20, 1906, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on left bank.

Channel.—Sand and gravel; shifts slightly.

Discharge measurements.—Made from car and cable at the gage.

Diversions.—On account of irrigation diversions above the station the record does not indicate the total run-off from the drainage area.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Owens River near Tinemaha, Cal., for 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 27	G. T. Peekema	2.82	495
Feb. 2	C. H. Lee	6.50	1,530
Mar. 11	....do	5.79	1,280
15	....do	3.60	640
May 4	....do	1.05	144
June 10	....do	3.04	573
22	....do	6.58	1,520
July 9	....do	7.01	1,700
Aug. 5	....do	3.98	777
25	J. E. Jones	2.11	318
Sept. 22	....do	1.43	231
Oct. 26	....do	2.64	432
Nov. 24	....do	2.88	473
Dec. 14	....do	2.78	477

Daily gage height, in feet, of Owens River near Tinemaha, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.50	6.20	2.90	3.30	1.15	2.20	6.00	4.85	1.95	2.50	2.82	2.90
2	2.45	6.55	3.00	3.45	1.18	2.20	6.10	4.60	1.90	2.60	2.85	2.90
3	2.48	5.10	3.20	3.55	1.10	2.10	6.10	4.40	1.80	2.60	2.88	2.90
4	2.50	4.80	3.35	3.80	1.05	2.20	6.15	4.20	1.75	2.60	2.88	2.88
5	2.50	4.55	3.55	4.10	1.05	2.45	6.20	3.98	1.65	2.60	2.86	2.88
6	2.50	4.20	3.40	4.00	1.10	2.70	6.35	3.85	1.60	2.58	2.85	2.88
7	2.50	3.90	3.20	3.98	1.10	2.80	6.50	3.80	1.55	2.55	2.82	2.88
8	2.50	3.60	3.80	4.00	1.10	3.00	6.75	3.70	1.50	2.55	2.85	2.88
9	2.50	3.48	4.90	3.95	1.05	3.00	7.00	3.50	1.48	2.55	2.85	2.88
10	3.10	3.40	5.25	3.90	1.02	3.04	7.15	3.40	1.60	2.50	2.82	2.85
11	3.55	3.30	5.72	3.80	1.00	3.30	7.25	3.35	1.60	2.53	2.80	2.85
12	3.10	3.20	4.65	3.60	1.00	3.50	7.10	3.30	1.60	2.60	2.80	2.80
13	3.05	3.10	4.20	3.30	1.00	3.70	6.88	3.20	1.60	2.60	2.82	2.75
14	2.90	3.10	4.00	3.05	1.10	4.25	6.95	3.15	1.60	2.60	2.85	2.75
15	2.95	3.05	3.60	3.00	1.15	4.50	7.05	3.10	1.60	2.60	2.95	2.78
16	2.90	3.00	3.40	3.00	1.25	4.85	7.25	3.05	1.60	2.58	3.00	2.80
17	2.80	2.98	3.30	2.95	1.35	5.30	7.45	3.00	1.58	2.55	3.00	2.75
18	2.70	3.00	3.20	2.95	1.25	5.50	7.65	2.90	1.55	2.55	2.98	2.70
19	2.68	3.00	3.10	2.75	1.15	5.85	7.80	2.80	1.58	2.55	2.93	2.68
20	2.70	3.00	3.00	2.55	1.10	6.25	7.85	2.80	1.55	2.56	2.90	2.75
21	2.70	3.00	3.00	2.30	1.15	6.50	7.80	2.70	1.48	2.50	2.90	2.70
22	2.75	2.95	2.95	2.10	1.20	6.60	7.70	2.50	1.43	2.50	2.90	2.60
23	2.85	2.95	2.95	2.05	1.25	6.50	7.50	2.40	1.50	2.55	2.88	2.65
24	2.80	2.95	3.00	2.00	1.30	6.38	7.10	2.35	1.60	2.60	2.88	2.65
25	2.85	2.90	2.98	1.90	1.65	6.00	7.00	2.10	1.60	2.65	2.88	2.65
26	2.80	2.85	2.95	1.80	2.00	5.70	6.70	2.05	1.63	2.63	2.90	2.63
27	2.80	2.75	3.00	1.65	1.95	5.50	6.40	2.03	1.65	2.60	2.95	2.68
28	2.80	2.80	3.05	1.55	1.85	5.60	6.10	2.00	1.65	2.70	2.90	2.70
29	3.30	.....	3.10	1.40	1.75	5.70	5.90	2.00	2.00	2.80	2.88	2.72
30	4.10	.....	3.10	1.20	1.40	5.90	5.50	2.00	2.25	2.80	2.88	2.75
31	5.20	.....	3.15	.....	2.00	.....	5.20	1.98	.....	2.80	.....	2.7

Daily discharge, in second-feet, of Owens River near Tinemaha, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	410	1,420	490	585	172	353	1,350	995	306	410	474	490
2	400	1,540	510	622	176	353	1,380	920	296	430	480	490
3	406	1,040	560	648	165	334	1,380	860	278	430	486	490
4	410	980	598	710	158	353	1,400	810	270	430	486	486
5	410	905	648	785	158	400	1,420	755	252	430	482	486
6	410	810	610	760	165	450	1,480	722	244	426	480	486
7	410	735	560	755	165	470	1,520	710	236	420	474	486
8	410	660	710	760	165	510	1,610	685	227	420	480	486
9	410	630	1,010	748	158	510	1,700	635	224	420	480	486
10	535	610	1,120	735	155	520	1,750	610	244	410	474	480
11	648	585	1,260	710	152	585	1,790	598	244	416	470	480
12	535	560	935	660	152	635	1,740	585	244	430	470	470
13	522	535	810	585	152	685	1,660	560	244	430	474	460
14	490	535	760	522	165	822	1,680	548	244	430	480	460
15	500	522	660	510	172	890	1,720	535	244	430	500	466
16	490	510	610	510	186	995	1,790	522	244	426	510	470
17	470	506	585	500	202	1,130	1,860	510	241	420	510	460
18	450	510	560	500	186	1,190	1,930	490	236	420	506	450
19	446	510	535	460	172	1,300	1,980	470	241	420	496	446
20	450	510	510	420	165	1,440	2,000	470	236	422	490	460
21	450	510	510	372	172	1,520	1,980	450	224	410	490	450
22	460	500	500	334	179	1,560	1,940	410	215	410	490	430
23	480	500	500	324	186	1,520	1,880	391	227	420	486	440
24	470	500	510	315	194	1,480	1,740	382	244	430	486	440
25	480	490	506	296	252	1,350	1,700	334	244	440	486	440
26	470	480	500	278	315	1,250	1,600	324	249	436	490	436
27	470	460	510	252	306	1,190	1,490	321	252	430	500	446
28	470	470	522	236	287	1,220	1,380	315	252	450	490	450
29	585	.....	535	210	270	1,250	1,320	315	315	470	486	454
30	785	.....	535	179	210	1,320	1,190	315	362	470	486	460
31	1,100	.....	548	.....	315	.....	1,100	311	.....	470	.....	450

NOTE.—Daily discharge determined from a fairly well-defined rating curve.

Monthly discharge of Owens River near Tinemaha, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	1,100	400	498	30,600	B.
February	1,540	460	661	36,700	A.
March	1,260	490	636	39,100	A.
April	785	179	509	30,300	A.
May	315	152	194	11,900	B.
June	1,560	334	920	54,700	A.
July	2,000	1,100	1,630	100,000	A.
August	995	311	544	33,400	A.
September	362	215	253	15,100	B.
October	470	410	429	26,400	B.
November	510	470	486	28,900	B.
December	490	436	464	28,500	B.
The year	2,000	152	602	436,000	

OWENS RIVER NEAR LONE PINE, CAL.

Location.—At Mount Whitney highway bridge, in sec. 23, T. 15 S., R. 36 E., about 2½ miles northeast of Lone Pine.

Records available.—January 1, 1909, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff at bridge.

Channel.—Sandy; fairly permanent.

Discharge measurements.—Made from car and cable about 1,000 feet below the bridge. Measurements prior to 1911 were made from bridge.

Diversions.—Record does not show total run-off from drainage area on account of diversions for irrigation above the station.

Accuracy.—Range of stage well covered but measurements plot a little scattering. Results are reliable.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Owens River near Lone Pine, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 3	G. T. Peekema	5.75	421
Feb. 2	do	8.92	1,080
3	do	9.80	1,380
5	do	9.28	1,150
5	do	9.15	1,100
6	do	8.80	1,030
7	do	8.48	937
9	do	7.78	779
10	do	7.48	709
11	do	7.27	686
12	do	7.07	618
13	do	6.98	618
Mar. 20	C. H. Lee	6.63	580
May 15	do	4.07	136
June 30	do	9.62	1,190
Aug. 28	J. E. Jones	5.02	320
Sept. 25	do	4.55	239
Oct. 30	do	6.00	478
Nov. 27	do	6.44	543
Dec. 17	do	6.25	489

Daily gage height, in feet, of Owens River near Lone Pine, Cal., for 1911.

[G. F. Marsh, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.85	7.3	6.3	6.5	4.3	4.9	9.7	9.7	4.85	4.9	6.05	6.4
2	5.85	7.7	6.3	6.55	4.3	5.0	9.8	8.9	4.7	5.5	6.15	6.4
3	5.8	9.1	6.5	6.55	4.2	5.2	9.9	8.6	4.7	5.6	6.15	6.4
4	5.7	9.9	6.8	6.55	4.1	5.3	10.0	8.0	4.6	5.65	6.2	6.4
5	5.7	10.0	6.9	6.85	4.1	5.1	10.1	7.8	4.5	5.7	6.2	6.4
6	5.7	8.8	7.0	7.3	4.0	5.3	10.1	7.5	4.45	5.75	6.25	6.4
7	5.7	8.4	7.0	7.5	4.0	5.4	10.1	7.0	4.45	5.75	6.3	6.4
8	5.75	8.0	7.1	7.7	3.9	5.6	10.15	7.0	4.45	5.75	6.3	6.4
9	5.8	7.9	7.2	7.55	3.9	5.9	10.25	6.6	4.45	5.7	6.3	6.4
10	5.9	7.4	7.5	7.35	3.85	5.95	10.45	6.8	4.4	5.7	6.3	6.4
11	6.1	7.3	7.8	7.2	3.8	6.1	10.65	6.4	4.4	5.7	6.25	6.35
12	6.6	7.2	8.2	7.0	3.8	6.5	10.75	6.0	4.4	5.7	6.25	6.35
13	6.8	7.0	9.6	6.9	3.8	6.7	10.85	5.9	4.4	5.75	6.2	6.35
14	6.55	6.95	8.2	6.8	3.75	7.0	10.7	5.9	4.4	5.8	6.25	6.35
15	6.4	6.6	7.1	6.75	3.8	7.3	10.6	5.9	4.4	5.85	6.3	6.3
16	6.2	6.5	7.5	6.6	3.8	7.5	10.7	5.85	4.4	5.9	6.4	6.3
17	6.2	6.4	7.2	6.3	3.8	8.0	10.8	5.8	4.4	5.9	6.4	6.3
18	6.05	6.3	7.0	6.1	3.85	8.5	10.85	5.8	4.4	5.9	6.45	6.3
19	6.0	6.3	6.9	6.0	3.9	8.8	10.9	5.75	4.4	5.85	6.45	6.25
20	6.0	6.4	6.7	5.9	3.9	9.2	10.95	5.75	4.4	5.85	6.5	6.25
21	6.0	6.5	6.6	5.6	4.0	9.6	11.0	5.6	4.4	5.85	6.45	6.2
22	6.0	6.5	6.5	5.5	4.0	9.95	11.05	5.55	4.4	5.8	6.4	6.2
23	6.0	6.4	6.35	5.3	4.0	10.2	10.65	5.5	4.4	5.85	6.4	6.2
24	6.2	6.4	6.4	5.1	4.05	10.35	10.45	5.4	4.4	5.85	6.4	6.15
25	6.2	6.35	6.4	5.0	4.15	10.3	10.3	5.3	4.45	5.85	6.4	6.15
26	6.2	6.35	6.45	5.0	4.2	10.2	10.2	5.3	4.5	5.9	6.4	6.15
27	6.2	6.3	6.5	4.9	4.2	9.9	10.1	5.25	4.6	5.95	6.4	6.1
28	6.3	6.3	6.4	4.7	4.5	9.7	10.0	5.2	4.65	5.9	6.4	6.1
29	6.5	.....	6.4	4.5	4.6	9.6	9.9	4.95	4.75	5.9	6.4	6.05
30	6.9	.....	6.45	4.4	4.8	9.65	9.95	4.9	4.8	5.95	6.4	6.0
31	7.1	.....	6.5	.....	4.9	.....	9.8	4.9	.....	6.0	.....	6.0

NOTE.—Relation of gage height to discharge probably not greatly affected by ice during the winter months.

Daily discharge, in second feet, of Owens River near Lone Pine, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	402	690	490	530	170	260	1,250	1,280	288	295	470	540
2	402	770	490	540	170	275	1,380	1,080	265	385	490	540
3	395	1,100	530	540	155	305	1,310	1,010	265	400	490	540
4	380	1,310	590	540	140	320	1,340	860	250	408	500	540
5	380	1,340	610	600	140	290	1,370	820	235	415	500	540
6	380	1,020	630	690	125	320	1,370	760	228	422	510	540
7	380	920	630	730	125	335	1,370	660	228	422	520	540
8	388	830	650	770	115	365	1,380	660	228	422	520	540
9	395	810	670	740	115	410	1,420	580	228	415	520	540
10	410	710	730	700	110	420	1,480	620	220	415	520	540
11	450	690	790	670	105	450	1,540	540	220	415	510	530
12	550	670	870	630	105	530	1,560	460	220	415	510	530
13	590	630	1,220	610	105	570	1,600	445	220	422	500	530
14	540	620	870	590	100	630	1,550	445	220	430	510	530
15	510	550	650	580	105	690	1,520	445	220	438	520	520
16	470	530	730	550	105	730	1,550	438	220	445	540	520
17	470	510	670	490	105	830	1,580	430	220	445	540	520
18	440	490	630	450	110	945	1,600	430	220	445	550	520
19	430	490	610	430	115	1,020	1,610	422	220	438	550	510
20	430	510	570	410	115	1,120	1,620	422	220	438	560	510
21	430	530	550	365	125	1,220	1,640	400	220	438	550	500
22	430	530	530	350	125	1,320	1,660	392	220	430	540	500
23	430	510	500	320	125	1,400	1,540	385	220	438	540	500
24	470	510	510	290	132	1,440	1,480	370	220	438	540	490
25	470	500	510	275	148	1,430	1,440	355	228	438	540	490
26	470	500	520	275	155	1,400	1,410	355	235	445	540	490
27	470	490	530	260	155	1,310	1,380	348	250	452	540	480
28	490	490	510	230	200	1,250	1,360	340	258	445	540	480
29	530	.....	510	200	215	1,220	1,340	302	272	445	540	470
30	610	.....	520	185	245	1,240	1,350	295	280	452	540	460
31	650	.....	530	.....	260	.....	1,310	295	.....	460	.....	460

NOTE.—Daily discharge determined from two fairly well-defined rating curves, the first applicable Jan. 1 to July 21; the second July 22 to Dec. 31.

Monthly discharge of Owens River near Lone Pine, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	650	380	459	28,200	B.
February	1,340	490	688	38,200	A.
March	1,220	490	624	38,400	A.
April	770	185	485	28,900	A.
May	260	100	139	8,550	B.
June	1,440	260	802	47,700	A.
July	1,660	1,250	1,460	89,800	A.
August	1,280	295	537	33,000	A.
September	288	220	235	14,000	B.
October	460	295	426	26,200	B.
November	560	470	525	31,200	A.
December	540	460	514	31,600	A.
The year	1,660	100	574	416,000	

OWENS LAKE NEAR OLANCHA, CAL.

Location.—About 1 mile north of Brier and near Olancha, Cal.

Records available.—March, 1908, to December 31, 1911.

Gages.—The original gage was established in March, 1908, near the Smith ranch This gage was submerged early in July, 1911, and a new one was installed, which was washed out in September, 1911. The present gage was installed November 1, 1911. Gage heights represent elevation of surface above mean sea level.

Cooperation.—Records furnished by the city of Los Angeles.

Elevation of water surface of Owens Lake near Olancha, Cal.

	Feet.
1908.	
Mar. 4	3,575.95
29	3,575.73
Apr. 19	3,575.78
26	3,575.90
May 28	3,575.60
June 4	3,575.40
1910.	
July 22	3,575.98
Sept. 21	3,574.95
Oct. 28	3,574.71
Dec. 1	3,574.89
1911.	
Jan. 5	3,575.29
Feb. 8	3,576.11
July 12	3,577.35
28	3,578.03
Nov. 1	3,577.35
5	3,577.50
Dec. 3	3,577.60

ROCK CREEK NEAR ROUND VALLEY, CAL.

Location.—About 400 feet below highway bridge in sec. 9, T. 6 S., R. 31 E., a short distance above the mouth of Pine Creek, and 2 miles northwest of Round Valley.
Records available.—August 3, 1903, to December 31, 1911.
Drainage area.—Approximately 46 square miles.
Gage.—Vertical staff on left bank. Gage was located at the highway bridge prior to July, 1906.
Channel.—Sand and cobblestone; somewhat shifting.
Discharge measurements.—Made from footbridge at gage.
Diversions.—Irrigation diversions above the station.
Accuracy.—Results are good.
Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Rock Creek near Round Valley, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 25	G. T. Peekema	1.50	36
Mar. 12	C. H. Lee	1.33	33
May 6	do	1.28	32
June 24	do	2.79	128
July 7	do	3.19	162
8	do	3.38	164
Aug. 2	J. E. Jones	2.15	86
23	do	1.55	49
Sept. 20	do	1.33	36
Oct. 24	do	1.44	38
Nov. 22	do	1.39	35
Oct. 12	do	1.40	37

Daily gage height, in feet, of Rock Creek near Round Valley, Cal., for 1911.

[L. L. Roberts, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.35	2.10	1.35	1.50	1.30	1.80	.....	2.75	1.65	1.30	.....	.....
2	.....	.....	.....	.....	.....	.....	3.30	2.15	.....	.....	1.50	1.40
3	1.35	1.55	1.30	1.45	1.23	1.95	.....	2.70	1.60	1.25	.....	.....
4	.....	.....	.....	.....	.....	.....	3.25	.....	1.50	.....	.....	1.40
5	1.40	1.50	1.35	1.65	1.25	2.10	3.25	2.63	.....	1.25	1.45	.....
6	.....	.....	.....	.....	1.28	.....	3.20	.....	1.45	1.20	.....	1.40
7	1.30	1.50	1.30	1.70	1.30	2.20	3.18	2.50	.....	1.20	1.45	.....
8	.....	.....	.....	.....	1.35	2.40	3.25	.....	1.45	1.30	.....	1.43
9	.....	1.45	2.80	1.50	.....	.....	.....	2.43	.....	.....	1.50	.....
10	1.45	.....	2.20	.....	1.40	2.50	3.23	.....	1.35	1.35	.....	1.40
11	.....	1.45	.....	1.35	1.45	2.65	.....	2.45	.....	.....	1.45	.....
12	1.45	.....	1.33	.....	.....	.....	3.45	.....	1.35	1.40	.....	1.40
13	.....	1.50	.....	1.30	1.50	2.70	3.40	2.20	.....	.....	1.50	.....
14	1.50	.....	1.35	.....	1.55	3.20	.....	.....	1.30	1.50	.....	1.38
15	1.45	1.50	.....	1.35	.....	.....	3.70	2.25	.....	1.50	1.45	.....
16	.....	.....	1.32	.....	1.65	3.50	3.50	.....	1.35	1.40	.....	1.40
17	1.50	1.45	1.35	1.40	1.60	3.65	.....	2.10	.....	1.40	1.45	1.35
18	.....	.....	1.30	.....	.....	3.70	3.30	2.15	1.30	.....	.....	.....
19	1.45	1.40	.....	1.35	1.75	3.70	.....	.....	.....	1.40	1.40	1.30
20	.....	.....	1.32	.....	.....	.....	3.15	2.00	1.33	.....	.....	.....
21	1.50	1.35	.....	1.40	1.85	3.80	.....	.....	.....	1.45	1.40	1.33
22	1.35	.....	1.25	.....	1.90	.....	3.10	2.50	1.30	.....	1.39	.....
23	.....	1.35	1.30	1.35	.....	3.65	.....	1.55	.....	1.45	.....	1.30
24	1.45	.....	1.35	.....	2.00	3.60	3.00	1.85	1.30	1.44	1.38	1.35
25	1.50	1.30	.....	1.43	.....	.....	.....	.....	.....	1.50	.....	.....
26	1.50	1.35	1.40	.....	1.90	3.40	2.95	1.80	1.30	.....	1.39	.....
27	1.50	.....	.....	1.35	.....	.....	.....	.....	.....	1.45	.....	1.30
28	.....	1.30	1.45	.....	1.85	3.45	2.90	1.73	1.33	.....	1.40	1.35
29	.....	.....	.....	1.40	.....	.....	.....	1.75	.....	1.50	.....	.....
30	3.40	.....	1.50	1.35	1.80	3.40	2.90	.....	1.25	.....	1.40	1.40
31	.....	.....	1.45	.....	.....	.....	.....	1.60	.....	1.45	.....	.....

Daily discharge, in second-feet, of Rock Creek near Round Valley, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	30	76	34	41	31	58	170	126	53	35	40	36
2	30	60	32	40	30	62	166	86	52	34	41	36
3	30	44	31	38	28	67	164	122	50	32	40	36
4	31	42	32	44	28	72	162	120	45	32	39	36
5	32	41	34	49	29	76	162	117	44	32	38	36
6	30	41	32	50	32	80	158	112	42	27	38	36
7	28	41	31	52	31	83	156	108	42	27	38	37
8	30	40	78	46	34	97	162	106	42	31	40	38
9	32	38	125	41	35	100	161	103	40	32	41	37
10	34	38	83	38	36	104	160	104	38	34	40	36
11	34	38	58	34	38	114	190	104	38	35	38	36
12	34	40	32	32	40	116	178	96	38	36	40	36
13	35	41	33	31	41	118	174	87	36	38	41	36
14	36	41	34	32	44	157	186	88	35	41	40	35
15	34	41	33	34	46	169	198	90	36	41	38	36
16	35	40	32	35	49	181	182	85	38	36	38	36
17	36	38	34	36	46	193	174	80	36	36	38	34
18	35	37	31	35	50	197	166	84	35	36	37	32
19	34	36	32	34	55	197	160	79	36	36	36	31
20	35	35	32	35	58	201	154	74	36	37	36	32
21	36	34	30	36	61	205	152	91	36	38	36	32
22	30	34	29	35	64	225	150	108	35	38	36	32
23	32	34	31	34	67	194	146	49	35	38	36	31
24	34	32	34	36	70	190	143	65	35	38	35	34
25	36	31	35	38	67	182	142	64	35	41	36	33
26	36	34	36	36	64	174	140	62	35	40	36	32
27	36	32	37	34	62	170	138	60	36	38	36	31
28	80	31	38	35	61	178	136	58	36	40	36	34
29	125	.....	40	36	60	176	136	59	34	41	36	35
30	166	.....	41	34	58	174	136	54	32	40	36	36
31	121	.....	38	.....	58	.....	131	50	.....	38	.....	36

NOTE.—Daily discharge determined from three fairly well defined curves, the first applicable Jan. 1 to 30; the second, Jan. 31 to June 21 and Oct. 6 to Dec. 31; the third, June 22 to Oct. 5. Discharge Jan. 28 and 29, June 22 and 27, and July 11 estimated from climatologic data and records of discharge of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Rock Creek near Round Valley, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	166	28	44.7	2,750	B.
February	76	31	39.6	2,200	B.
March	125	29	40.4	2,480	B.
April	52	31	37.7	2,240	B.
May	70	28	47.5	2,920	B.
June	225	58	144	8,570	B.
July	198	131	159	9,780	B.
August	126	50	86.8	5,340	B.
September	53	32	38.7	2,300	B.
October	41	27	36.1	2,220	B.
November	41	35	37.9	2,260	B.
December	38	31	34.6	2,130	B.
The year	225	27	62.4	45,200	

PINE CREEK NEAR ROUND VALLEY, CAL.

Location.—At footbridge 300 feet above highway bridge in sec. 9, T. 6 S., R. 31 E., about 600 feet above the junction with Rock Creek and 2 miles northwest of Round Valley.

Records available.—August 3, 1903, to December 31, 1911.

Drainage area.—Approximately 32 square miles above mouth of canyon.

Gage.—Vertical staff on left bank 300 feet above highway bridge. Prior to May 13, 1908, the gage was located 150 feet below the highway bridge.

Channel.—Lava rock and sand; fairly permanent.

Discharge measurements.—Made from footbridge at gage.

Diversions.—Water is diverted above the station for irrigation.

Accuracy.—Rating curves are fairly well defined and results are good.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Pine Creek near Round Valley, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 25	G. T. Peekema	3.61	5.5
Mar. 12	C. H. Lee	3.68	6.5
May 6	....do	3.68	6.4
June 24	....do	5.28	145
July 8	....do	6.35	297
Aug. 2	J. E. Jones	4.80	92
23	....do	4.12	32
Sept. 20	....do	3.75	11
Oct. 24	....do	3.72	10
Nov. 22	....do	3.65	8.0
Dec. 12	....do	3.60	7.3

Daily gage height, in feet, of Pine Creek near Round Valley, Cal., for 1911.

[L. L. Roberts, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.60	4.10	3.55	3.50	3.50	3.90	.....	5.10	3.95	4.30	.....	.....
2	.....	.....	.....	.....	.....	.....	6.25	.....	.....	.....	3.70	3.65
3	3.60	3.60	3.60	3.50	3.50	4.10	.....	5.15	3.90	4.00	.....	.....
4	.....	.....	.....	.....	.....	.....	6.20	.....	3.90	.....	.....	3.60
5	3.60	3.60	3.60	3.50	3.45	4.30	6.25	4.90	.....	3.90	3.70	.....
6	.....	.....	.....	.....	.....	.....	6.20	.....	3.85	3.75	.....	3.65
7	3.55	3.60	3.60	3.55	3.50	4.50	6.25	4.85	.....	3.75	3.63	.....
8	.....	.....	.....	.....	3.50	4.70	6.30	.....	3.85	3.70	.....	3.53
9	.....	3.55	4.00	3.50	.....	.....	.....	4.55	.....	.....	3.70	.....
10	3.65	.....	3.80	.....	3.50	4.75	6.15	.....	3.75	3.70	.....	3.60
11	.....	3.55	.....	3.50	3.50	4.80	.....	4.55	.....	.....	3.65	.....
12	3.60	.....	3.68	.....	.....	.....	6.20	.....	3.70	3.65	.....	3.60
13	.....	3.60	.....	3.50	3.55	4.80	6.15	4.30	.....	.....	3.70	.....
14	3.60	.....	3.65	.....	3.60	4.90	.....	.....	3.65	3.63	.....	3.60
15	3.55	3.60	.....	3.50	.....	.....	6.50	4.30	.....	3.70	3.65	.....
16	.....	.....	3.60	.....	3.60	5.40	6.30	.....	3.65	3.65	.....	3.60
17	3.60	3.55	3.65	3.55	3.90	5.80	.....	4.30	.....	3.75	3.65	3.55
18	.....	.....	3.60	.....	.....	6.00	6.25	4.33	3.70	.....	.....	.....
19	3.55	3.60	.....	3.50	4.20	6.40	.....	.....	.....	3.70	3.65	3.60
20	.....	.....	3.63	.....	.....	.....	6.10	4.25	3.75	.....	.....	.....
21	3.60	3.50	.....	3.53	4.25	6.60	.....	.....	.....	3.70	3.65	3.60
22	3.60	.....	3.60	.....	4.30	.....	6.15	4.30	3.65	.....	3.65	.....
23	.....	3.50	3.65	3.50	.....	6.70	.....	.....	.....	3.65	.....	3.60
24	3.60	.....	3.60	.....	4.40	6.60	5.90	4.10	3.55	.....	3.70	3.60
25	.....	3.50	.....	3.50	.....	.....	.....	.....	.....	3.70	.....	.....
26	3.60	3.50	3.65	.....	4.20	6.20	5.90	4.15	3.50	.....	3.65	.....
27	3.65	.....	.....	3.50	.....	.....	.....	.....	.....	3.65	.....	3.53
28	.....	3.50	3.60	.....	4.00	6.25	5.50	4.00	3.55	.....	3.70	3.60
29	.....	.....	.....	3.50	.....	.....	.....	4.10	.....	3.70	.....	.....
30	4.50	.....	3.65	3.50	3.90	6.20	5.50	.....	3.50	.....	3.65	3.55
31	.....	.....	3.60	.....	.....	.....	.....	4.00	.....	3.60	.....	.....

NOTE.—Relation of gage height to discharge probably not affected by ice during the winter months. Accuracy of daily gage records is affected at times by great diurnal fluctuations of stage.

Daily discharge, in second-feet, of Pine Creek near Round Valley, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5	30	4	3	3	17.2	278	124	20.5	45	8.2	8.2
2	5	18	4	3	3	24	282	127	19	34	9.5	8.2
3	5	5	5	3	3	30	278	130	18	23.5	9.5	7.5
4	5	5	5	3	2.6	38	274	116	18	21	9.5	6.8
5	5	5	5	3	2.3	45	282	102	16.7	18	9.5	7.5
6	5	5	5	3	2.6	54	274	99	15.5	11.2	8.6	8.2
7	4	5	5	4	3	62	282	96	15.5	11.2	7.6	6.8
8	4	5	14	4	3	81	290	81	15.5	9.5	8.6	5.5
9	5	4	23.5	3	3	84	278	66	13.4	9.5	9.5	6.2
10	6.5	4	12	3	3	86	266	66	11.2	9.5	8.8	6.8
11	6	4	9	3	3	91	280	66	10.4	8.8	8.2	6.8
12	5	4	7.4	3	3.5	91	274	56	9.5	8.2	8.8	6.8
13	5	5	7.0	3	4	91	266	45	8.8	7.9	9.5	6.8
14	5	5	6.5	3	5	102	294	45	8.2	7.6	8.8	6.8
15	4	5	5.8	3	5	131	322	45	8.2	9.5	8.2	6.8
16	4	5	5	3	5	160	290	45	8.2	8.2	8.2	6.8
17	5	4	6.5	4	17.2	214	286	45	8.8	11.2	8.2	5.9
18	5	4	5	4	27	244	282	47	9.5	10.4	8.2	6.4
19	4	5	5.4	3	37.5	306	270	44	10.4	9.5	8.2	6.8
20	4	4	5.9	3.3	39	322	259	41	11.2	9.5	8.2	6.8
21	5	3	5.4	3.6	41	339	262	43	9.7	9.5	8.2	6.8
22	5	3	5	3.3	45	370	266	45	8.2	8.8	8.2	6.8
23	5	3	6.5	3	49	356	248	38	7.0	8.2	8.8	6.8
24	5	3	5	3	53	339	229	30	5.9	8.8	9.5	6.8
25	5	3	5.8	3	45	306	229	32	5.4	9.5	8.8	6.4
26	5	3	6.5	3	37.5	274	229	34	5	8.8	8.2	6.0
27	6.5	3	5.8	3	30	260	201	29	5.4	8.2	8.8	5.5
28	25	3	5	3	23.5	282	173	23.5	5.9	8.8	9.5	6.8
29	45	.....	5.8	3	20	278	173	30	5.4	9.5	8.8	6.4
30	62	.....	6.5	3	17.2	274	173	27	5	8.2	8.2	5.9
31	46	.....	5	.....	17.2	.....	148	23.5	.....	6.8	.....	6.0

NOTE.—Daily discharge determined from two fairly well defined curves applicable Jan. 1 to June 23 and June 24 to Dec. 31, 1911. Discharge Jan. 28 and 29, June 22 and 27, and July 11 estimated from climatologic data and records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Pine Creek near Round Valley, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	62	4	10.0	615	C.
February	30	3	5.54	308	B.
March	23.5	4	6.72	413	B.
April	4	3	3.17	189	B.
May	53	2.3	17.8	1,090	B.
June	370	17.2	178	10,600	B.
July	322	148	256	15,700	B.
August	130	23.5	59.4	3,650	B.
September	20.5	5	10.6	631	B.
October	45	6.8	12.2	750	B.
November	9.5	7.6	8.69	517	B.
December	8.2	5.5	6.73	414	B.
The year	370	2.3	48.3	34,900	

BISHOP CREEK NEAR BISHOP, CAL.

Location.—At highway bridge on Bishop Road, in sec. 9, T. 7 S., R. 32 E., 2 miles below the mouth of the canyon and 4 miles southeast of Bishop.

Records available.—August 9, 1903, to February 28, 1911; discontinued March 1, 1911.

Drainage area.—Approximately 63 square miles above the mouth of the canyon.

Gage.—Vertical staff at bridge in use since August 31, 1909. The gage used previous to this date was at approximately the same datum.

Channel.—Rocky and fairly permanent.

Discharge measurements—Made from bridge at gage.

Diversions.—Water is diverted for irrigation and power above the gage.

Accuracy.—Results are good.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

The following discharge measurement was made by G. T. Peekema:
January 24, 1911: Gage height, 1.85 feet; discharge, 67 second-feet.

Daily gage height, in feet, and discharge, in second-feet, of Bishop Creek near Bishop, Cal. for 1911.

[A. F. Kilpatrick, observer.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*	*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*	*Feet.*	*Sec.-ft.*
1	1.65	48	1.8	62	16	1.9	73	2.0	85
2	1.85	68	1.95	79	17	1.85	68	2.2	110
3	1.55	39	1.95	79	18	1.85	68	2.4	138
4	1.9	73	2.0	85	19	1.85	68	2.5	154
5	1.6	43	1.8	62	20	1.85	68	2.35	131
6	1.85	68	1.8	62	21	1.7	52	2.5	154
7	1.65	48	1.85	68	22	1.8	62	2.5	154
8	1.75	57	1.8	62	23	1.85	68	2.4	138
9	1.55	39	1.9	73	24	1.95	79	2.2	110
10	1.85	68	2.1	97	25	1.5	35	1.9	73
11	1.15	15	1.9	73	26	1.9	73	1.8	62
12	1.85	68	1.85	68	27	1.85	68	1.9	73
13	2.0	85	1.8	62	28	1.95	79	1.8	62
14	1.85	68	1.75	57	29	2.2	110	.....	.....
15	1.65	48	1.9	73	30	1.9	73	.....	.....
					31	1.95	79	.....	.....

NOTE.—Daily gage heights Jan. 11 and Feb. 19 probably regulated by the power company. Relation of gage height to discharge not affected by ice during cold weather. Discharge determined from a fairly well-defined rating curve.

Monthly discharge of Bishop Creek near Bishop, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	110	15	63.2	3,890	B.
February	154	57	89.5	4,970	B.

BIG PINE CREEK NEAR BIG PINE, CAL.

Location.—At footbridge in sec. 26, T. 9 S., R. 33 E., about 2 miles southwest of Big Pine.

Records available.—December 5, 1903, to December 15, 1905, and January 1, 1907, to February 28, 1911. Discontinued February 28, 1911.

Drainage area.—Approximately 27 square miles above mouth of canyon.

Gage.—Vertical staff on right bank at bridge. Previous to October 29, 1907, the station was about half a mile west of the present site.

Channel.—Gravel and bowlders; somewhat shifting.

Discharge measurements.—Made from footbridge at gage.

Diversions.—Water is diverted above the station for irrigation.

Accuracy.—Results are good.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

The following discharge measurement was made by G. T. Peekema:
January 24, 1911: Gage height, 2.60 feet; discharge, 16 second-feet.

Daily gage height, in feet, and discharge, in second-feet, of Big Pine Creek near Big Pine, Cal., for 1911.

[C. Seglie and E. Smith, observers.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*	*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*	*Feet.*	*Sec.-ft.*
1	2.55	14	2.95	32	16	.....	13	.....	15
2	.....	14	.....	28	17	2.5	13	2.6	16
3	2.5	13	2.85	26	18	.....	13	.....	15
4	.....	13	.....	30	19	2.5	13	2.55	14
5	2.5	13	2.8	24	20	.....	14	.....	14
6	.....	13	.....	22	21	2.55	14	2.55	14
7	2.5	13	2.7	20	22	.....	15	.....	15
8	.....	12	.....	19	23	2.6	16	2.6	16
9	2.45	12	2.65	18	24	.....	16	.....	16
10	.....	12	.....	17	25	2.6	16	2.6	16
11	2.45	12	2.6	16	26	.....	16	.....	17
12	.....	12	.....	16	27	2.6	16	2.65	18
13	2.5	13	2.6	16	28	.....	18	.....	18
14	.....	13	.....	15	29	2.75	22	.....	.....
15	2.5	13	2.55	14	30	.....	40	.....	.....
					31	3.0	35	.....	.....

NOTE.—Relation of gage height to discharge probably not affected by ice during January and February. Daily discharge determined from a well-defined rating curve. Discharge Jan. 30 and Feb. 4 estimated from climatologic data and records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Big Pine Creek near Big Pine, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	40	12	15.5	953	B.
February	32	14	18.5	1,030	B.

TINEMAHA CREEK NEAR BIG PINE,[1] CAL.

Location.—Near Peterson's ranch house, in sec. 21, T. 10 S., R. 34 E., about 1 mile west of Fish Springs schoolhouse, and 7 miles south of Big Pine.

Records available.—December 7, 1906, to February 28, 1911. Discontinued March 1, 1911.

Drainage area.—Approximately 5.2 square miles above mouth of canyon.

Gage.—Vertical staff on right bank at footbridge.

Channel.—Gravel; shifting.

Discharge measurements.—Made from bridge at gage.

Diversions.—No water diverted above the station.

Accuracy.—Results are fair.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

The following discharge measurement was made by G. T. Peekema:
January 23, 1911: Gage height, 0.71 foot; discharge, 5.1 second-feet.

Daily gage height, in feet, and discharge, in second-feet, of Tinemaha Creek near Big Pine, Cal., for 1911.

[Sherman R. Burdick, observer.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
1	0.85	8.6	0.9	10	16	0.7	4.6	0.7	4.6
2	.8	7.2	.85	8.6	17	.7	4.6	.8	7.2
3	.78	6.7	.8	7.2	18	.7	4.6	.8	7.2
4	.8	7.2	1.0	14	19	.71	4.9	.8	7.2
5	.8	7.2	.85	8.6	20	.7	4.6	.8	7.2
6	.8	7.2	.82	7.8	21	.7	4.6	.8	7.2
7	.8	7.2	.8	7.2	22	.7	4.6	.8	7.2
8	.8	7.2	.8	7.2	23	.68	4.2	.8	7.2
9	.8	7.2	.78	6.7	24	.71	4.9	.8	7.2
10	.85	8.6	.78	6.7	25	.7	4.6	.8	7.2
11	.8	7.2	.78	6.7	26	.68	4.2	.8	7.2
12	.8	7.2	.78	6.7	27	.68	4.2	.75	5.9
13	.8	7.2	.78	6.7	28	.85	8.6	.8	7.2
14	.75	5.9	.78	6.7	29	1.2	22	.....	.....
15	.7	4.6	.72	5.1	30	1.21	22	.....	.....
					31	1.0	14	.....	.....

NOTE.—Relation of gage height to discharge probably not affected by ice during January and February.

BIRCH CREEK NEAR BIG PINE,[2] CAL.

Location.—Near Peterson's ranch house, in sec. 16, T. 10 S., R. 34 E., about 1 mile west of Fish Springs schoolhouse and 7 miles south of Big Pine.

[1] Station formerly known as Tinemaha Creek near Tinemaha.
[2] Station formerly known as Birch Creek near Tinemaha.

Records available.—June 14 to December 9, 1905, and December 7, 1906, to February 28, 1911. Discontinued March 1, 1911.
Drainage area.—Approximately 7 square miles above mouth of the canyon.
Gage.—Vertical staff on left bank at footbridge.
Channel.—Coarse gravel; shifting.
Diversions.—No water diverted above the station.
Discharge measurements.—Made from bridge at gage.
Accuracy.—Results are fair.
Cooperation.—Maintained in cooperation with the city of Los Angeles.

The following discharge measurement was made by G. T. Peekema.
January 23, 1911: Gage height, 0.31 foot; discharge, 3.4 second-feet.

Daily gage height, in feet, and discharge, in second-feet, of Birch Creek near Big Pine, Cal. for 1911.

[Sherman R. Burdick, observer.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Dis. charge.	Gage height.	Dis-charge.		Gage height.	Dis-charge.	Gage height.	Dis-charge.
1	0.32	4.2	0.70	24	16	0.35	5.2	0.45	9.5
2	.31	3.9	.55	15	17	.32	4.2	.40	7.0
3	.30	5.3	.40	7.0	18	.30	3.5	.30	3.5
4	.30	3.5	.41	7.5	19	.30	3.5	.30	3.5
5	.30	3.5	.40	7.0	20	.30	3.5	.30	3.5
6	.30	3.5	.40	7.0	21	.30	3.5	.30	3.5
7	.30	3.5	.35	5.2	22	.32	4.2	.30	3.5
8	.30	3.5	.32	4.2	23	.30	3.5	.30	3.5
9	.30	3.5	.30	3.5	24	.35	5.2	.30	3.5
10	.40	7.0	.30	3.5	25	.38	6.3	.30	3.5
11	.35	5.2	.30	3.5	26	.35	5.2	.30	3.5
12	.32	4.2	.30	3.5	27	.30	3.5	.30	3.5
13	.32	4.2	.30	3.5	28	.35	5.2	.30	3.5
14	.35	5.2	.30	3.5	29	.55	15	.....	.....
15	.35	5.2	.40	7.0	30	1.10	52	.....	.....
					31	.90	38	.....	.....

NOTE.—Relation of gage heights to discharge probably not affected by ice during January and February. Discharge determined from a fairly well-defined curve.

Monthly discharge of Birch Creek near Big Pine, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	52	3.5	7.26	4.46	C.
February	24	3.5	5.71	3.17	C.

TABOOSE CREEK NEAR ABERDEEN,[1] CAL.

Location.—At upper road crossing in sec. 16, T. 11 S., R. 34 E., about 4 miles northwest of Aberdeen.
Records available.—January 1, 1906, to February 28, 1911. Discontinued February 28, 1911.
Drainage area.—Approximately 7 square miles above mouth of canyon.

[1] Formerly known as Tibbetts.

Gage.—Vertical staff on left bank at footbridge. Previous to February 25, 1907, the station was maintained about half a mile west of the lower road crossing, 2 miles northwest of Aberdeen. Previous to March 7, 1910, the datum was 1.00 foot higher.

Channel.—Shifting sand.

Discharge measurements.—Made from bridge at gage.

Diversions.—No water diverted above the gage.

Accuracy.—Results are fair.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

The following discharge measurement was made by G. T. Peekema:
January 23, 1911: Gage height, 0.79 foot; discharge, 3.0 second-feet.

Daily gage height, in feet, and discharge, in second-feet, of Taboose Creek near Aberdeen, Cal., for 1911.

[Ray Bowers, observer.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Dis-charge.	Gage height.	Dis-charge.		Gage height.	Dis-charge.	Gage height.	Dis-charge.
	Feet.	*Sec.-ft.*	*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*	*Feet.*	*Sec.-ft.*
1	.....	3	.....	9	16	.8	3	.....	3
2	0.8	3	.....	6	17	.....	3	1.25	3
3	.....	3	0.9	4	18	.....	3	.....	3
4	.....	3	.....	4	19	.....	3	.....	3
5	.....	3	.....	3	20	.8	3	.8	3
6	.8	3	.8	3	21	.....	3	.....	3
7	.....	3	.....	3	22	.....	3	.....	3
8	.....	3	.....	3	23	.8	3	.....	3
9	.8	3	.....	3	24	.....	3	.78	3
10	.....	3	.8	3	25	.....	3	.....	3
11	.....	3	.....	3	26	.....	3	.....	3
12	.....	3	.....	3	27	.8	3	.78	3
13	.8	3	.8	3	28	.....	4	.....	3
14	.....	3	.....	3	29	.....	5	.....	.....
15	.....	3	.....	3	30	1.05	7	.....	.....
					31	.....	10	.....	.....

NOTE.—Relation of gage heights to discharge affected by ice Feb. 16.
Discharge determined from a fairly well-defined rating curve. Discharge Jan. 31 and Feb. 17 estimated from records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Taboose Creek near Aberdeen, Cal., for 1911.

[Drainage area, 13.9 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	10	3	3.5	0.252	0.29	215	B.
February	9	3	3.4	.245	.26	189	B.

NOTE.—It has been estimated that about half of the discharge of Taboose Creek at the mouth of the canyon is lost by seepage between the canyon and the gaging station. Hence, discharge per square mile and run-off depth in inches does not apply uniformly to the entire basin.

GOODALE CREEK NEAR ABERDEEN,[1] CAL.

Location.—One-fourth mile west of upper road crossing, in sec. 16, T. 11 S., R. 34 E., about 4 miles west of Aberdeen.

Records available.—January 1, 1906, to February 28, 1911. Discontinued February 28, 1911.

Drainage area.—Approximately 5 square miles above mouth of canyon.

Gage.—Vertical staff on left bank at footbridge. Previous to March 7, 1910, the gage datum was 1.00 foot higher.

Channel.—Sand; somewhat shifting.

Discharge measurements.—Made from bridge at gage.

Diversions.—No water diverted above the gage.

Accuracy.—Results are good.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

The following discharge measurement was made by G. T. Peekema: January 23, 1911: Gage height, 0.93 foot; discharge, 2.7 second-feet.

Daily gage height, in feet, and discharge, in second-feet, of Goodale Creek near Aberdeen, Cal., for 1911.

[Ray Bowers, observer.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Dis. charge.	Gage height.	Dis. charge.		Gage height.	Dis. charge.	Gage height.	Dis. charge.
	Feet.	*Sec.-ft.*	*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*	*Feet.*	*Sec.-ft.*
1	.....	3.1	.....	8.5	16	0.95	3.1	.....	3.0
2	0.95	3.1	.....	5.0	17	.....	3.1	1.25	3.0
3	.....	3.1	0.98	3.5	18	.....	3.1	.....	3.0
4	.....	3.1	.....	3.4	19	.....	3.1	.....	3.0
5	.....	3.1	.....	3.2	20	.95	3.1	.92	2.7
6	.95	3.1	.95	3.1	21	.....	3.1	.....	2.7
7	.....	3.1	.....	3.1	22	.....	3.1	.....	2.7
8	.....	3.1	.....	3.1	23	.95	3.1	.....	2.7
9	.95	3.1	.....	3.1	24	.....	3.1	.92	2.7
10	.....	3.1	.95	3.1	25	.....	3.1	.....	2.7
11	.....	3.1	.....	3.1	26	.....	3.1	.....	2.7
12	.....	3.1	.....	3.1	27	.95	3.1	.92	2.7
13	.95	3.1	.95	3.1	28	.....	4.0	.....	2.7
14	.....	3.1	.....	3.1	29	.....	6.0	.....	.....
15	.....	3.1	.....	3.0	30	1.15	7.3	.....	.....
					31	.....	9.0	.....	.....

NOTE.—Relation of gage heights to discharge probably not affected by ice except Feb. 17, when slush ice was running. Discharge Jan. 31 and Feb. 17 estimated from climatologic data and records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read. Discharge determined from a fairly well-defined rating curve.

Monthly discharge of Goodale Creek near Aberdeen, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	9.0	3.1	3.55	218	B.
February	8.5	2.7	3.24	180	B.

[1] Formerly known as Tibbetts.

OAK CREEK NEAR INDEPENDENCE, CAL.

Location.—Three-fourths of a mile west of Bell's flour mill in sec. 2, T. 13 S., R. 34 E., about 4 miles northwest of Independence.

Records available.—June 18, 1905, to February 28, 1911. Discontinued February 28, 1911.

Drainage area.—Approximately 15.4 square miles above mouth of canyon.

Gage.—Vertical staff on right bank at footbridge. The original gage was located about 1 mile west of Old Fort Independence. On October 1, 1906, the station was moved to Bell's flour mill. This station was discontinued on April 19, 1907, and moved to the present site.

Channel.—Sand and gravel; somewhat shifting.

Discharge measurements.—Made from bridge at gage.

Diversions.—No water diverted above the gage.

Accuracy.—Results good.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Oak Creek near Independence, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 20	G. T. Peekema	0.59	7.2
Feb. 17	C. H. Lee	.60	8.3

Daily gage height, in feet, and discharge, in second-feet, of Oak Creek near Independence, Cal., for 1911.

[A. N. Bell, observer.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*	*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*	*Feet.*	*Sec.-ft.*
1	.....	8.0	.....	15	16	0.58	7.9	.....	12
2	0.58	7.9	0.62	9.7	17	.....	7.5	.....	12
3	.....	7.3	.....	9.2	18	.56	7.1	0.60	8.7
4	.55	6.7	.60	8.7	19	.....	7.5	.....	8.3
5	.....	6.7	.....	9.2	20	.....	7.9	.58	7.9
6	.....	6.7	.62	9.7	21	.59	8.3	.....	7.9
7	.55	6.7	.....	9.2	22	.....	8.3	.58	7.9
8	.....	7.3	.60	8.7	23	.59	8.3	.....	7.9
9	.....	8.0	.....	8.7	24	.....	7.7	.58	7.9
10	.60	8.7	.....	8.7	25	.56	7.1	.....	7.9
11	.....	8.3	.60	8.7	26	.....	7.6	.....	8.0
12	.58	7.9	.....	8.7	27	.....	8.2	.57	8.1
13	.....	7.5	.60	8.7	28	.60	8.7	.....	8.0
14	.56	7.1	.....	8.5	29	.....	10	.....	.....
15	.....	7.5	.59	8.3	30	.....	16	.....	.....
					31	.78	20	.....	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Relation of gage heights to discharge probably not affected by ice during January and February. Discharge Jan. 29 to 30 and Feb. 1, 16, and 17 estimated from climatologic data and records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Oak Creek near Independence, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	20	6.7	8.40	516	B.
February	15	7.9	8.76	487	B.

LITTLE PINE CREEK [1] NEAR INDEPENDENCE, CAL.

Location.—Three hundred feet above city waterworks, in sec. 18, T. 13 S., R. 35 E., 1 mile west of Independence.

Records available.—June 15, 1905, to February 28, 1911. Discontinued March 1, 1911.

Drainage area.—Approximately 8.4 square miles above mouth of canyon.

Gage.—Vertical staff on left bank at footbridge. Previous to August 20, 1906, the station was located at the city waterworks.

Channel.—Bowlders and gravel; somewhat shifting.

Discharge measurements.—Made from bridge at gage.

Diversions.—No water diverted above the gage.

Accuracy.—Results are good.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Little Pine Creek near Independence, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 30	G. T. Peekema	0.26	4.4
Feb. 17	C. H. Lee	.31	6.5

Daily gage height, in feet, and discharge, in second-feet, of Little Pine Creek near Independence, Cal., for 1911.

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*	*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*	*Feet.*	*Sec.-ft.*
1	0.17	2.4	.....	10.0	16	.....	3.1	0.34	7.1
2	.....	2.8	0.36	7.9	17	0.20	2.5	.....	6.3
3	.22	3.1	.....	6.2	18	.....	3.1	.30	5.5
4	.....	2.8	.30	5.5	19	.24	3.7	.....	4.6
5	.20	2.5	.....	4.9	20	.....	4.6	.24	3.7
6	.....	2.5	.26	4.3	21	.30	5.5	.....	3.4
7	.20	2.5	.....	4.2	22	.....	4.6	.22	3.1
8	.....	2.5	.25	4.0	23	.24	3.7	.....	3.1
9	.20	2.5	.....	3.2	24	.....	3.8	.22	3.1
10	.....	2.5	.20	2.5	25	.25	4.0	.....	2.6
11	.20	2.5	.....	3.7	26	.....	3.7	.12	2.1
12	.....	3.1	.28	4.9	27	.23	3.4	.....	3.8
13	.24	3.7	.....	4.3	28	.....	6.0	.30	5.5
14	.....	3.7	.24	3.7	29	.44	11.5	.....	.....
15	.24	3.7	.....	5.4	30	.....	12.0	.....	.....
					31	.48	13.5	.....	.....

NOTE.—Relation of gage height to discharge probably not affected by ice during January and February. Discharge determined from a fairly well defined rating curve. Discharge February 1 estimated from records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

[1] This creek is known locally as Independence Creek.

Monthly discharge of Little Pine Creek near Independence, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	13.5	2.4	4.24	261	C.
February	10.0	2.1	4.62	257	C.

LONE PINE CREEK NEAR LONE PINE, CAL.

Location.—500 feet above division boxes on the creek in sec. 29, T. 15 S., R. 36 E., about three-fourths of a mile west of Lone Pine.

Records available.—January 1, 1906, to February 28, 1911. Discontinued March 1, 1911.

Drainage area.—Approximately 12 square miles above mouth of canyon.

Gage.—Vertical staff on left bank above footbridge.

Channel.—Gravel and bowlders; shifts at high stages.

Discharge measurements.—Made from bridge at gage.

Diversions.—No water is diverted above the gage.

Accuracy.—Results are good.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Lone Pine Creek near Lone Pine, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 6	G. T. Peekema	1.98	4.8
Feb. 6	.....do	2.09	6.9

Daily gage height, in feet, and discharge, in second-feet, of Lone Pine Creek near Lone Pine, Cal., for 1911.

[S. A. Gallaher, observer.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*	*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*	*Feet.*	*Sec.-ft.*
1	.....	5.5	2.2	8.7	16	.....	4.5	2.1	6.8
2	2.0	5.5	.....	10.0	17	1.95	4.5	.....	6.6
3	.....	5.5	.....	10.0	18	.....	4.5	.....	6.4
4	.....	5.5	2.4	14.5	19	.....	4.5	2.05	6.2
5	2.0	5.5	.....	10.0	20	1.95	4.5	.....	6.0
6	.....	5.2	.....	10.0	21	.....	4.5	.....	5.8
7	.....	4.8	2.2	8.7	22	.....	4.5	2.0	5.5
8	1.95	4.5	.....	8.0	23	1.95	4.5	.....	5.2
9	.....	4.5	.....	7.1	24	.....	4.5	.....	4.8
10	.....	4.5	2.05	6.2	25	.....	4.5	1.95	4.5
11	1.95	4.5	.....	6.2	26	1.95	4.5	.....	4.5
12	.....	4.5	.....	6.2	27	.....	4.5	.....	4.5
13	.....	4.5	2.05	6.2	28	.....	7.0	1.95	4.5
14	1.95	4.5	.....	6.4	29	2.3	11.0	.....	.....
15	.....	4.5	.....	6.6	30	.....	16.0	.....	.....
					31	.....	11.0	.....	.....

NOTE.—Relation of gage height to discharge probably not affected by ice during January and February. Discharge determined from a fairly well-defined curve. Discharge Jan. 27, 28, 30, and 31 and Feb. 2, 3, 5, and 6 estimated from climatologic record and records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Lone Pine Creek near Lone Pine, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	16.0	4.5	5.56	342	C.
February	14.5	4.5	7.00	389	C.

TUTTLE CREEK NEAR LONE PINE, CAL.

Location.—50 feet below division box and creek in sec. 32, T. 15 S., R. 36 E., about 2 miles southwest of Lone Pine.

Records available.—January 1, 1906, to February 28, 1911. Discontinued March 1, 1911.

Drainage area.—Approximately 7.8 square miles above mouth of canyon.

Gage.—Vertical staff on right bank at footbridge

Channel.—Shifting.

Discharge measurements.—Made from bridge at gage.

Diversions.—Water is diverted for irrigation above the station.

Accuracy.—Results are fair.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Tuttle Creek near Lone Pine, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 6	G. T. Peekema	1.30	6.1
Feb. 6	.....do	1.30	7.4

Daily gage height, in feet, and discharge, in second-feet, of Tuttle Creek near Lone Pine, Cal., for 1911.

[S. A. Gallaher, observer.]

Day.	January.		February.		Day.	January.		February.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*	*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*	*Feet.*	*Sec.-ft.*
1	.....	6	1.3	6	16	.....	6	1.4	9
2	1.3	6	.....	7	17	1.3	6	.....	8
3	.....	6	.....	8	18	.....	6	.....	8
4	.....	6	1.4	9	19	.....	6	1.35	8
5	1.3	6	.....	8	20	1.3	6	.....	8
6	.....	6	1.3	7	21	.....	6	.....	8
7	.....	6	1.35	8	22	.....	6	1.35	8
8	1.3	6	.....	8	23	1.3	6	.....	8
9	.....	6	.....	7	24	.....	6	.....	7
10	.....	6	1.3	7	25	.....	6	1.3	7
11	1.3	6	.....	7	26	1.3	6	.....	7
12	.....	6	.....	7	27	.....	7	.....	7
13	.....	6	1.3	7	28	.....	8	1.3	7
14	1.3	6	.....	7	29	1.4	9	.....	.....
15	.....	6	.....	8	30	.....	9	.....	.....
					31	.....	8	.....	.....

NOTE.—Relation of gage heights to discharge probably not affected by ice during January and February. Discharge determined by indirect method for shifting channels. Discharge Jan. 28 and 30 estimated from records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Tuttle Creek near Lone Pine, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	9	6	6.4	394	C.
February	9	6	7.5	417	C.

COTTONWOOD CREEK NEAR OLANCHA, CAL.

Location.—100 feet above intake of diversion pipe of the Los Angeles Aqueduct in sec. 21, T. 17 S., R. 36 E., about 10 miles northwest of Olancha.

Records available.—January 1, 1906, to March 31, 1911. Discontinued April 1, 1911.

Drainage area.—Approximately 42 square miles above mouth of canyon.

Gage.—Vertical staff on right bank 500 feet below footbridge. Previous to September 9, 1908, the station was maintained at a point about one-fourth mile above the present location.

Channel.—Sand and gravel; somewhat shifting.

Discharge measurements.—Made from footbridge above gage.

Diversion.—No water diverted above the gage.

Accuracy.—Results good.

Cooperation.—Maintained in cooperation with the city of Los Angeles.

Discharge measurements of Cottonwood Creek near Olancha, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 4	G. T. Peekema	1.41	12
Feb. 8	.....do	1.76	21

Daily gage height, in feet, and discharge, in second-feet, of Cottonwood Creek near Olancha, Cal., for 1911.

[Sam Robinson, observer.]

Day.	January.		February.		March.		Day.	January.		February.		March.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1....	1.5	13	1.7	18	1.35	10	16....	1.5	13	1.4	11	1.6	15
2....	1.5	13	1.8	21	1.4	11	17....	1.45	12	1.5	13	1.55	14
3....	1.4	11	1.8	21	1.4	11	18....	1.45	12	1.45	12	1.55	14
4....	1.4	11	1.7	18	1.4	11	19....	1.4	11	1.45	12	1.55	14
5....	1.4	11	1.7	18	1.4	11	20....	1.4	11	1.4	11	1.55	14
6....	1.4	11	1.85	23	1.45	12	21....	1.4	11	1.4	11	1.6	15
7....	1.4	11	1.75	20	1.45	12	22....	1.4	11	1.4	11	1.6	15
8....	1.4	11	1.75	20	1.5	13	23....	1.4	11	1.4	11	1.6	15
9....	1.4	11	1.65	16	1.6	15	24....	1.4	11	1.4	11	1.6	15
10....	1.35	10	1.65	16	1.65	16	25....	1.5	13	1.4	11	1.6	15
11....	1.45	12	1.6	15	1.65	16	26....	1.5	13	1.4	11	1.6	15
12....	1.5	13	1.5	13	1.65	16	27....	1.5	13	1.4	11	1.6	15
13....	1.5	13	1.5	13	1.6	15	28....	1.5	13	1.4	11	1.6	15
14....	1.5	13	1.5	13	1.6	15	29....	1.7	18	.....	.....	1.7	18
15....	1.5	13	1.45	12	1.6	15	30....	1.8	21	.....	.....	1.8	21
							31....	1.9	25	.....	.....	1.8	21

NOTE.—Relation of gage height to discharge probably not affected by ice during January and February. Discharge determined from a well-defined curve.

Monthly discharge of Cottonwood Creek near Olancha, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	25	10	12.8	787	B.
February	23	11	14.4	800	B.
March	21	10	14.5	892	B.

MONO LAKE BASIN.

RUSH CREEK NEAR MONO LAKE, CAL.

Location.—At highway bridge one-fourth mile above the mouth of the creek, in the NE. ¼ sec. 13, T. 1 N., R. 26 E., about 8 miles southeast of Mono Lake post office, 3 miles below the mouth of Walker Creek.

Records available.—November 16, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Original gage vertical staff fastened to a cottonwood tree on the right bank just above the bridge. This gage was washed out on June 24, 1911, and a new gage was installed July 6 at an independent datum, as the bench mark was destroyed by the June flood. September 15 the gage was moved and the datum was raised 0.90 foot. All gage heights beginning with July 6 have been reduced to the present datum.

Channel.—Sand and gravel; will shift at high water.

Discharge measurements.—Made from highway bridge.

Winter flow.—Affected by ice.

Diversions.—Water is diverted above the station for irrigation.

Cooperation.—Gage heights furnished by United States Forest Service.

Estimates are withheld until additional measurements are made.

Discharge measurements of Rush Creek near Mono Lake, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
June 18	J. E. Stewart	[a] 8.45	1,190
July 22	G. T. Peekema	[b] 4.80	[c] 717

[a] Gage heights referred to original gage and datum.
[b] Gage heights referred to gage installed July 6 and datum established Sept. 15.
[c] Measurements made above Walker, Parker, and several small streams the flow of which has been included to give the total discharge past the gage:

	Second-feet.
Discharge of Rush Creek	641
Discharge of Parker Creek	45
Discharge of Walker Creek	11
Estimated total discharge of other small streams	20
Total discharge past gage	717

Daily gage height, in feet, of Rush Creek near Mono Lake, Cal., for 1911.

[John E. Smith and Fred B. Clark, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1				3.40								
2									2.60	2.38		
3						6.32						
4	2.73	3.68	3.50								2.26	
5								3.70				
6					6.36		5.50			2.31		
7												
8				4.10								
9												
10						6.95						
11	2.82	2.83									2.28	2.08
12							5.35	3.35		2.30		
13					6.30				2.35			
14												
15				5.35					2.38	2.25		
16												2.08
17						7.80						
18		2.91	2.75									
19											2.20	
20					6.12							
21	3.00						5.20	2.95		2.25		
22				5.69								
23												2.12
24												
25		3.40	3.23						2.45			
26												
27					6.74							
28	2.99											
29				6.10			4.10					
30												2.50
31												

NOTE.—Relation of gage heights to discharge probably affected by ice about Jan. 16 to Feb. 10 and Dec. 26 to 31. For information regarding datum of gage, see description.

LEEVINING CREEK NEAR MONO LAKE, CAL.

Location.—In the SE. ¼ SE. ¼ sec. 17, T. 1 N., R. 26 E., in the Mono National Forest, about 3¼ miles above the mouth, 4 miles from Mono Lake post office.

Records available.—November 17, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to cottonwood tree on left bank 250 feet below ranger's camp.

Channel.—Gravel; fairly permanent.

Discharge measurements.—Made by wading near gage.

Diversions.—Less than 100 acre-feet are irrigated from ditch above the gage.

Winter flow.—Affected by ice.

Cooperation.—Gage heights furnished by United States Forest Service.

Estimates are withheld until additional measurements are made.

Discharge measurements of Leevining Creek near Mono Lake, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
June 18[a]	J. E. Stewart	4.55	590
July 21[b]	G. T. Peekema	3.93	323

[a] Made from highway bridge 3 miles below gage.
[b] Made from foot-log in Sylvester meadow 3 miles above gage. Practically no water enters creek or is diverted from creek between point of measurement and gage.

Daily gage height, in feet, of Leevining Creek near Mono Lake, Cal., for 1911.

[William J. Clark and Fred B. Clark, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.10	2.25	2.45	2.35	2.60	2.90	4.10	.....	2.68	2.33	.....	.....
2	2.79	2.37	2.50	2.36	2.60	3.00	4.15	.....	2.65	2.32	2.18	.....
3	2.15	2.41	2.19	2.38	2.62	3.24	4.30	3.30	2.60	2.30	2.19	.....
4	2.25	2.48	2.15	2.37	2.66	3.45	4.30	.....	2.58	2.32	2.19	.....
5	2.21	2.47	2.14	2.35	2.63	3.55	4.50	3.15	.....	2.30	2.19	.....
6	2.08	2.48	2.15	2.38	2.72	3.80	4.70	3.10	.....	2.30	2.19	.....
7	2.08	2.83	2.21	2.39	2.74	3.60	4.75	3.00	.....	2.28	2.17	.....
8	2.07	2.85	2.35	2.41	2.72	3.50	.....	3.05	.....	2.27	2.15	.....
9	2.10	2.35	2.51	2.40	2.71	3.55	.....	3.00	.....	2.25	2.14	.....
10	2.16	2.31	2.52	2.38	2.69	3.85	.....	3.10	.....	2.25	2.17	2.13
11	2.99	2.25	2.20	2.38	2.69	4.00	.....	.....	.....	2.25	2.35	2.13
12	2.85	2.27	2.28	2.35	2.71	4.15	4.25	3.00	2.38	2.25	2.50	2.11
13	3.10	2.34	2.38	2.34	2.74	4.40	4.35	2.90	2.35	2.25	2.20	2.10
14	3.60	2.71	2.29	2.32	2.72	4.30	4.60	2.85	2.35	.....	2.22	2.09
15	2.11	2.71	2.18	2.30	2.70	4.40	4.80	2.80	2.35	2.23	2.20	2.09
16	2.23	2.75	2.13	2.31	2.68	4.70	4.40	2.85	2.35	2.22	2.19	2.08
17	2.94	3.11	2.18	2.31	2.66	4.75	4.40	2.85	2.35	2.20	2.19	2.15
18	3.41	3.31	2.17	2.33	2.63	4.85	4.50	2.80	2.35	2.21	2.18	2.20
19	3.01	2.25	2.19	2.32	2.64	4.90	4.25	2.75	2.35	2.20	2.18	2.30
20	2.35	2.41	2.17	2.35	2.71	4.85	4.20	2.73	.....	2.21	2.18	2.38
21	2.31	2.71	2.16	2.37	2.82	4.80	4.00	2.80	.....	2.20	2.17	2.55
22	2.41	2.16	2.16	2.41	2.90	4.40	.....	2.75	.....	.....	.....	2.77
23	2.26	2.17	2.17	2.42	3.11	4.20	.....	2.70	2.38	2.20	.....	2.75
24	2.28	2.15	2.19	2.50	3.18	3.90	.....	2.70	2.35	2.19	.....	3.00
25	2.23	2.18	2.21	2.54	3.30	3.75	3.40	.....	2.38	2.18	.....	3.00
26	2.25	2.91	2.22	2.57	3.05	4.00	3.40	.....	.....	2.18	.....	3.00
27	2.31	2.21	2.20	2.60	2.98	4.35	3.40	.....	.....	2.19	.....	3.00
28	2.37	2.72	2.21	2.59	3.01	4.65	3.45	.....	.....	2.20	.....	3.00
29	2.32	.....	2.25	2.58	3.03	4.45	3.40	.....	.....	.....	.....	3.00
30	2.45	.....	2.31	2.58	3.00	4.20	3.45	.....	2.35	2.20	.....	3.48
31	2.34	.....	2.30	.....	2.95	.....	3.40	2.65	.....	2.20	.....	3.48

NOTE.—Relation of gage height to discharge probably affected by ice Jan. 1 to about Mar. 15 and about Dec. 15 to 31.

WALKER LAKE BASIN.

EAST WALKER RIVER NEAR BRIDGEPORT, CAL.

Location.—In the SW. ¼ SE. ¼ sec. 34, T. 6 N., R. 25 E., Mount Diablo base and meridian, in the Mono National Forest, about 4¼ miles north of Bridgeport.

Records available.—July 29 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on left bank.

Channel.—Gravel.

Discharge measurements.—No measurements have been made at this station.

Winter flow.—Affected by ice.

Cooperation.—Gage heights furnished by United States Forest Service.

Estimates are withheld until additional data have been secured.

Daily gage height, in feet, of East Walker River near Bridgeport, Cal., for 1911.

[Henry W. Atcheson and C. Wyatt, observers.]

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1			0.79		0.41		16						1.20
2		1.91		0.48		0.88	17						
3							18					0.00	
4					.40		19		1.01				
5							20				0.36		
6		1.90					21						
7				.45			22		.90	0.56			
8		1.11					23						
9						1.12	24				.39		
10				.40			25					.99	
11							26		.88	.52			
12							27						
13		1.09	.51		.45		28				.42		
14				.41			29	2.15	.83				
15							30			.54	.40		
							31						

NOTE.—Low stage of river Nov. 18 caused by closing of irrigation reservoir at Twin Lakes. Relation of gage height to discharge probably affected by ice about Dec. 9 to 31.

EAST WALKER RIVER NEAR MASON, NEV.

Location.—At highway bridge in S. ½ NE. ¼ sec. 26, T. 12 N., R. 25 E., 2½ miles above junction with West Walker River and 7 miles above Mason.

Records available.—November 21, 1910, to December 31, 1911. From 1902 to 1908 a station was maintained at the Ross ranch, a short distance above the present station.

Drainage area.—Not measured.

Gage.—Vertical staff on left bank 100 feet below the bridge.

Channel.—Sand; shifting.

Discharge measurements.—Made from highway bridge.

Winter flow.—Some ice forms along the banks.

Diversions.—About 10,000 acres are irrigated above the station.

Accuracy.—Great changes in conditions of flow occurred during 1911. A temporary diversion dam above the bridge was partly destroyed January 31 and sediment held back by it partly filled in the section at the gage. This sediment was apparently largely scoured out during the high water of June. Estimates are accordingly subject to considerable error.

Discharge measurements of East Walker River near Mason, Nev., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Feb. 18	H. D. McGlashan	4.58	119
Apr. 6	J. E. Stewart	7.65	885
28	D. S. Stuver	6.50	490
June 7	....do	7.15	696
15	J. E. Stewart	8.72	1,260
Aug. 3	G. T. Peekema	5.98	500
Oct. 31	J. E. Stewart	4.31	162

Daily gage height, in feet, of East Walker River near Mason, Nev., for 1911.

[Mrs. J. H. Hillburn, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.60	5.60	4.50	6.60	6.40	5.80	7.80	6.00	3.70	3.80	4.20	3.70
2	3.55	5.70	4.50	6.70	6.30	6.20	7.70	6.00	3.70	3.80	4.20	3.65
3	3.40	5.70	4.50	7.00	6.30	6.20	7.50	5.90	3.70	3.90	4.20	3.70
4	3.40	5.70	4.65	7.40	6.20	6.30	7.50	5.90	3.65	3.90	4.20	3.70
5	3.40	5.60	4.70	7.50	6.40	6.60	7.50	5.80	3.65	4.00	4.20	3.70
6	3.60	5.30	4.65	7.80	6.60	6.80	7.60	5.60	3.60	4.00	4.20	3.60
7	3.60	5.10	4.70	7.50	6.50	7.20	7.70	5.30	3.60	4.00	4.20	3.70
8	3.60	5.00	4.80	7.50	6.40	7.30	7.90	4.90	3.60	4.00	4.20	3.80
9	3.65	4.90	4.40	7.50	6.20	8.20	7.80	4.50	3.60	4.00	4.20	3.80
10	3.90	4.85	4.90	7.50	6.10	8.20	7.80	4.50	3.60	4.00	4.20	3.70
11	3.90	4.85	4.90	7.10	6.10	8.30	7.80	4.50	3.60	4.00	4.10	3.60
12	3.75	4.85	4.90	6.90	6.10	8.40	7.80	4.50	3.60	4.00	4.00	3.60
13	3.85	4.70	4.80	6.70	6.15	8.40	7.80	4.45	3.60	4.00	4.00	3.50
14	3.80	4.70	4.80	6.40	6.20	8.70	8.10	4.40	3.60	4.00	4.00	3.50
15	3.50	4.60	4.90	6.00	6.30	8.80	8.30	4.35	3.60	4.00	4.00	3.40
16	3.50	4.60	5.00	6.00	6.00	9.10	8.50	4.30	3.60	4.00	4.00	3.40
17	3.40	4.58	5.30	6.00	5.90	8.92	8.60	4.30	3.60	4.00	3.85	3.40
18	3.40	4.60	5.00	6.50	6.00	9.10	8.80	4.30	3.55	4.00	3.85	3.30
19	3.55	4.80	5.30	6.50	5.90	9.25	8.70	4.20	3.55	4.00	3.80	3.30
20	3.90	4.80	5.45	6.50	5.90	[a]9.35	8.50	4.20	3.55	4.00	3.80	3.20
21	3.90	4.70	5.50	6.30	5.90	9.40	8.10	4.10	3.55	4.00	3.80	3.20
22	4.10	4.50	5.80	6.40	5.90	9.30	7.60	4.10	3.60	4.00	3.85	3.20
23	4.00	4.50	6.20	6.40	6.20	9.20	7.30	4.10	3.60	4.00	3.85	3.15
24	4.05	4.50	5.80	6.50	6.30	8.70	7.40	4.05	3.70	4.00	3.70	3.10
25	4.20	4.40	5.80	6.60	6.30	8.10	7.60	4.05	3.70	4.00	3.70	3.10
26	4.30	4.35	5.80	6.50	6.30	7.80	7.40	4.00	3.65	4.00	3.70	3.10
27	4.20	4.35	5.60	6.50	6.20	7.70	7.30	3.90	3.60	4.00	3.70	3.10
28	4.20	4.35	5.80	6.50	6.20	7.60	6.90	3.90	3.65	4.20	3.70	3.05
29	4.20	.....	6.10	6.40	5.90	7.90	6.70	3.90	3.65	4.20	3.70	3.05
30	4.15	.....	5.90	6.40	5.90	7.80	6.55	3.80	3.70	4.20	3.70	3.00
31	5.00	.....	6.40	.....	5.80	.....	6.40	3.80	.....	4.20	.....	3.00

[a] Maximum 9.5 at 11 a. m.

NOTE.—Relation of gage height to discharge probably not much affected by the ice which formed at this station in 1911. Temporary diversion dam above bridge partly washed out Jan. 31.

Daily discharge, in second-feet, of East Walker River near Mason, Nev., for 1910–11.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1	.....	73	11	.....	92	21	96	107
2	.....	75	12	.....	108	22	97	102
3	.....	78	13	.....	102	23	97	97
4	.....	82	14	.....	97	24	92	97
5	.....	113	15	.....	92	25	92	118
6	.....	102	16	.....	92	26	87	118
7	.....	102	17	.....	82	27	68	82
8	.....	102	18	.....	82	28	66	68
9	.....	97	19	.....	73	29	68	68
10	.....	92	20	.....	82	30	68	64
						31	.....	68

Daily discharge, in second-feet, of East Walker River near Mason, Nev., for 1910–11—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	64	340	110	525	465	315	1,020	500	90	100	145	90
2	60	350	110	555	440	415	985	500	90	100	145	86
3	48	340	110	645	440	415	925	475	90	110	145	90
4	48	325	125	785	415	440	925	475	86	110	145	90
5	48	295	130	820	465	525	925	450	86	120	145	90
6	64	225	125	925	525	585	955	400	81	120	145	81
7	64	185	130	820	495	715	985	335	81	120	145	90
8	64	170	140	820	465	750	1,040	255	81	120	145	100
9	68	155	100	820	415	1,060	1,020	190	81	120	145	100
10	92	148	155	820	390	1,060	1,020	190	81	120	145	90
11	92	148	155	680	390	1,100	1,020	190	81	120	132	81
12	78	148	155	615	390	1,140	1,020	190	81	120	120	81
13	87	130	140	555	402	1,140	1,020	182	81	120	120	72
14	82	130	140	465	415	1,260	1,100	175	81	120	120	72
15	56	120	155	365	440	1,300	1,160	168	81	120	120	63
16	56	120	170	365	365	1,420	1,240	160	81	120	120	63
17	48	118	215	365	340	1,350	1,270	160	81	120	105	63
18	48	120	170	495	365	1,420	1,340	160	76	120	105	55
19	60	140	215	495	340	1,480	1,300	145	76	120	100	55
20	92	140	245	495	340	1,520	1,240	145	76	120	100	47
21	92	130	255	440	340	1,550	1,100	132	76	120	100	47
22	113	110	315	465	340	1,520	955	132	81	120	105	47
23	102	110	415	465	415	1,480	865	132	81	120	105	43
24	108	110	315	495	440	1,300	895	126	90	120	90	39
25	124	100	315	525	440	1,100	955	126	90	120	90	39
26	136	95	315	495	440	1,020	895	120	86	120	90	39
27	124	95	275	495	415	985	865	110	81	120	90	39
28	124	95	315	495	415	955	745	110	86	145	90	36
29	124	.....	390	465	340	1,040	685	110	86	145	90	36
30	118	.....	340	465	340	1,020	640	100	90	145	90	32
31	225	.....	465	.....	315	.....	600	100	.....	145	.....	32

NOTE.—Daily discharge 1910 to 1911 determined from three rating curves as follows: Nov. 21, 1910 to Jan. 30, 1911, fairly accurate; Feb. 9 to June 20, fairly well defined; June 21 to Dec. 31, not well defined, Discharge Jan. 31 to Feb. 6, 1911, determined by indirect method for shifting channels. No reduction made in discharge for ice effect.

Monthly discharge of East Walker River near Mason, Nev., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1910.					
November 21-30	97	66	83.1	1,650	B.
December	118	64	90.5	5,560	B.
1911.					
January	225	48	87.4	5,370	C.
February	350	95	168	9,330	C.
March	465	110	216	13,300	B.
April	925	365	574	34,200	A.
May	525	315	405	24,900	A.
June	1,550	315	1,050	62,500	B.
July	1,340	600	991	60,900	B.
August	500	100	218	13,400	B.
September	90	76	83.0	4,940	B.
October	145	100	121	7,440	B.
November	145	90	118	7,020	B.
December	100	32	64.1	3,940	B.
The year	1,550	32	341	247,000	

NOTE.—See description for discussion of accuracy.

WALKER RIVER AT MASON, NEV.

Location.—At the highway bridge at Mason, in the SW. ¼ sec. 33, T. 13 N., R. 25 E., about 4½ miles below the junction of East Walker and West Walker rivers.
Records available.—November 21, 1910, to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff fastened to second bent from right end of bridge.
Channel.—Shifting sand.
Discharge measurements.—Made from highway bridge.
Winter flow.—Affected by ice.
Diversions.—A large part of the flow of both the East and Walker is used for irrigation.
Accuracy.—Results are good.

Discharge measurements of Walker River at Mason, Nev, in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Feb. 19	H. D. McGlashan	4.50	335
Apr. 6	J. E. Stewart	6.20	1,260
29	D. S. Stuver	5.72	1,030
June 7	.....do	7.60	2,410
16	J. E. Stewart	9.00	3,860
Aug. 3	G. T. Peekema	5.66	957
Oct. 31	J. E. Stewart	4.28	274

Daily gage height, in feet, of Walker River at Mason, Nev., for 1911.

[T. T. Kelley, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.00	6.05	4.55	4.90	5.60	6.20	7.55	5.90	3.90	3.70	4.30	4.00
2	4.00	5.90	4.60	5.60	5.70	6.00	7.50	5.80	3.80	3.70	4.30	4.00
3	4.05	5.70	4.60	5.80	5.65	6.10	7.50	5.65	3.80	3.70	4.30	4.10
4	4.05	5.45	4.50	6.00	5.75	6.10	7.50	5.50	3.80	3.80	4.30	4.10
5	4.00	5.40	4.50	6.10	5.80	6.60	7.50	5.25	3.80	3.90	4.30	4.10
6	4.00	4.90	4.60	6.20	6.20	7.20	7.70	5.20	3.70	3.90	4.30	4.20
7	4.05	4.80	4.60	6.20	6.00	7.50	8.00	5.15	3.70	3.90	4.30	4.20
8	4.05	4.80	4.90	6.20	5.90	7.60	8.00	4.85	3.80	3.90	4.30	4.20
9	4.15	4.75	4.90	6.10	5.85	7.50	8.20	4.75	3.80	3.90	4.30	4.20
10	4.35	4.75	5.00	6.20	5.80	7.50	7.90	4.50	3.80	3.90	4.30	4.20
11	4.35	4.60	5.20	6.00	5.70	7.75	7.80	4.50	3.80	3.90	4.30	4.20
12	4.40	4.45	5.20	5.80	5.70	7.90	7.80	4.50	3.80	4.00	4.30	4.20
13	4.35	4.50	5.00	5.50	5.80	8.20	7.80	4.50	3.70	4.00	4.30	4.20
14	4.25	4.55	4.90	5.40	5.80	8.70	8.00	4.30	3.70	4.00	4.30	4.10
15	4.02	4.50	4.90	5.20	5.80	9.20	8.35	4.30	3.70	4.00	4.30	4.10
16	4.02	4.45	4.80	5.00	5.70	9.20	8.50	4.20	3.70	4.00	4.30	4.10
17	4.10	4.40	4.80	5.20	5.50	9.25	8.50	4.20	3.70	4.00	4.30	4.10
18	4.15	4.50	4.90	5.40	5.40	9.38	8.70	4.20	3.70	4.00	4.30	4.00
19	4.30	4.45	4.85	5.40	5.40	9.60	8.80	4.10	3.70	4.00	4.30	4.00
20	4.35	4.45	4.90	5.50	5.40	9.70	8.60	4.10	3.70	4.00	4.30	4.00
21	4.50	4.50	4.90	5.48	5.60	9.50	8.20	4.10	3.70	4.00	4.30	4.00
22	4.70	4.50	4.90	5.35	5.80	9.35	7.75	4.10	3.70	4.00	4.30	4.00
23	4.50	4.60	4.90	5.40	6.00	8.80	7.25	4.10	3.70	4.10	4.30	4.00
24	4.50	4.60	5.00	5.50	6.40	8.60	7.25	4.00	3.60	4.10	4.30	4.00
25	4.55	4.50	5.10	5.80	6.50	8.50	7.45	4.00	3.60	4.10	4.30	4.00
26	4.50	4.50	5.20	5.85	6.50	8.00	7.35	4.00	3.60	4.10	4.30	4.00
27	4.40	4.50	5.20	5.95	6.20	7.50	7.15	4.00	3.70	4.20	4.30	4.00
28	4.45	4.60	5.10	5.90	6.40	7.50	6.55	4.00	3.70	4.20	4.20	4.00
29	4.45	.....	5.20	5.75	6.40	7.85	6.50	4.00	3.70	4.20	4.20	4.00
30	5.45	.....	5.10	5.75	6.50	7.80	6.35	4.00	3.70	4.20	4.00	4.00
31	5.40	.....	4.80	.....	6.40	.....	6.10	4.00	.....	4.20	.....	4.00

NOTE.—Relation of gage heights to discharge probably not much affected by ice during 1911.

Daily discharge, in second-feet, of Walker River at Mason, Nev., for 1910–11.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1		230	11		260	21	242	200
2		230	12		260	22	242	200
3		230	13		260	23	245	200
4		245	14		230	24	245	200
5		295	15		200	25	230	215
6		260	16		200	26	245	230
7		260	17		200	27	230	200
8		260	18		200	28	200	200
9		260	19		200	29	200	162
10		260	20		188	30	230	130
						31		150

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	130	1,180	365	515	885	1,280	2,380	1,080	165	120	275	190
2	130	1,080	385	885	945	1,140	2,330	1,010	140	120	275	190
3	140	945	385	1,010	915	1,210	2,330	915	140	120	275	215
4	140	798	345	1,140	978	1,210	2,330	825	140	140	275	215
5	130	770	345	1,210	1,010	1,580	2,330	688	140	165	275	215
6	130	515	385	1,280	1,280	2,060	2,510	660	120	165	275	245
7	140	470	385	1,280	1,140	2,330	2,790	635	120	165	275	245
8	140	470	515	1,280	1,080	2,420	2,790	492	140	165	275	245
9	162	448	515	1,210	1,040	2,330	2,990	448	140	165	275	245
10	215	448	560	1,280	1,010	2,330	2,690	345	140	165	275	245
11	215	385	660	1,140	945	2,560	2,600	345	140	165	275	245
12	230	328	660	1,010	945	2,090	2,600	345	140	190	275	245
13	215	345	560	825	1,010	2,990	2,600	345	120	190	275	245
14	188	365	515	770	1,010	3,520	2,790	275	120	190	275	215
15	134	345	515	660	1,010	4,100	3,140	275	120	190	275	215
16	134	328	470	560	945	4,100	3,300	245	120	190	275	215
17	150	310	470	660	825	4,160	3,300	245	120	190	275	215
18	162	345	515	770	770	4,320	3,520	245	120	190	275	190
19	200	328	492	770	770	4,580	3,630	215	120	190	275	190
20	215	328	515	825	770	4,710	3,410	215	120	190	275	190
21	260	345	515	814	885	4,460	2,990	215	120	190	275	190
22	330	345	515	742	1,010	4,280	2,560	215	120	190	275	190
23	260	385	515	770	1,140	3,630	2,100	215	120	215	275	190
24	260	385	560	825	1,430	3,410	2,100	190	100	215	275	190
25	278	345	610	1,010	1,500	3,300	2,280	190	100	215	275	190
26	260	345	660	1,040	1,500	2,790	2,200	190	100	215	275	190
27	230	345	660	1,110	1,280	2,330	2,020	190	120	245	275	190
28	245	385	610	1,080	1,430	2,330	1,540	190	120	245	245	190
29	245	.....	660	978	1,430	2,640	1,500	190	120	245	245	190
30	672	.....	610	978	1,500	2,600	1,390	190	120	245	190	190
31	645	.....	470	.....	1,430	.....	1,210	190	.....	245	.....	190

NOTE.—Discharge Nov. 21, 1910, to Jan. 31, 1911, determined from a fairly accurate rating curve; Feb. 1 to Dec. 31, 1911, from a rating curve well defined above 250 second-feet. No reduction in discharge made on account of ice.

Monthly discharge of Walker River at Mason, Nev., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1910.					
November 21–30	245	200	231	4,580	B.
December	295	130	220	13,500	B.
1911.					
January	672	130	225	13,800	B.
February	1,180	310	480	26,700	B.
March	660	345	514	31,600	A.
April	1,280	515	948	56,400	A.
May	1,500	770	1,090	67,000	A.
June	4,710	1,140	2,910	173,000	A.
July	3,630	1,210	2,520	155,000	A.
August	1,080	190	388	23,900	A.
September	165	100	126	7,500	B.
October	245	120	188	11,600	B.
November	275	190	270	16,100	B.
December	245	190	210	12,900	B.
The year	4,710	100	823	596,000	

ROBINSON CREEK NEAR BRIDGEPORT, CAL.

Location.—At the mouth of the canyon in the SW. ¼ NW. ¼ sec. 15, T. 4 N., R. 24 E., 5 miles above the junction with Buckeye Creek, and 5½ miles southwest of Bridgeport.

Records available.—November 18, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to a pine tree on the left bank.

Channel.—Composed of gravel and small bowlders; appears permanent.

Discharge measurements.—Made by wading near gage.

Winter flow.—Affected by ice.

Diversions.—The dam at the outlet of Twin Lakes partly regulates the flow at this station.

Cooperation.—Gage heights furnished by United States Forest Service.

Additional measurements are required before estimates can be made.

Discharge measurements of Robinson Creek near Bridgeport, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
June 17	J. E. Stewart [a]	5.00	578
July 25	G. T. Peekema [a]	4.50	387

[a] Made by wading half a mile above gage.

Daily gage heights, in feet, of Robinson Creek near Bridgeport, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1							4.45		3.45		3.00	
2					3.11			4.20		2.99		2.39
3						3.78	4.43					
4	2.29										2.95	
5								4.38				
6						3.90	4.50					
7	2.31									2.99		
8				2.99				3.49				
9					2.90							2.40
10						4.05				2.95		
11	2.30											
12				3.00		4.20	4.50	3.67				
13					3.45				3.12			
14										3.04	2.36	
15				2.95					3.10			
16					3.35		4.80					2.35
17						5.00						
18	2.55								3.10		2.37	
19				2.98				3.55				
20					3.25		5.00			3.02		
21						5.20			3.10			
22				3.00				3.52				
23					3.45				3.00			2.30
24				3.02		4.70	4.50			2.95		
25											2.35	
26								3.51	3.52			
27					3.75	4.40						
28			2.72							3.01		
29							4.25	3.48				
30			2.80	3.10					3.10			2.00
31					3.70							

NOTE.—Dam at Twin Lakes closed on Nov. 14 and gates closed Nov. 25. Relation of gage height to discharge probably more or less affected by ice during the winter.

BUCKEYE CREEK NEAR BRIDGEPORT, CAL.

Location.—At the mouth of the canyon, in the SE. ¼ NW. ¼ sec. 3, T. 4 N., R. 24 E., in the Mono National Forest, half a mile below Hot Springs, 4½ miles southwest of Bridgeport.

Records available.—November 18, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to large cottonwood tree on left bank about half a mile above the mouth of the canyon.

Channel.—Composed of gravel and bowlders and is rough.

Discharge measurements.—Made by wading or from a foot-log 20 feet above the gage.

Winter flow.—Affected by ice.

Cooperation.—Gage heights furnished by United States Forest Service.

Sufficient measurements have not been made to define a rating curve for this station.

Discharge measurements of Buckeye Creek near Bridgeport, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
June 17	J. E. Stewart [a]	4.45	527
July 25	G. T. Peekema [a]	3.95	238

[a] Made from foot-log 20 feet above gage.

Daily gage height, in feet, of Buckeye Creek near Bridgeport, Cal., for 1911.

[H. W. Atcheson and Clarence Wyatt, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1							4.40		3.38		3.00	
2					3.31			3.80		3.05		2.86
3						3.75	4.40					
4	2.79										2.95	
5								3.75				
6						4.00	4.45					
7	2.79									3.04		
8				2.99				3.68				
9					3.40							2.85
10						4.10				2.90		
11	2.63											
12				2.93		4.30	4.30	3.60				
13					3.39				3.18			
14										3.00	2.93	
15				2.90		4.20			3.12			
16					3.30		4.35					2.85
17						4.45						
18	2.80								3.11		2.92	
19				3.06				3.50				
20					3.46		4.35			2.90		
21	2.85					4.80			3.10			
22				3.12				3.43				
23					3.80				3.10			2.85
24						4.40	3.95			2.95		
25				3.40							2.85	
26								3.38	3.50			
27					3.55	4.50						
28			2.82							2.97		
29				3.25			4.05	3.40				
30			2.95						3.20			2.80
31					3.50							

NOTE.—Relation of gage height to discharge probably more or less affected by ice during the winter.

SWAGER CREEK NEAR BRIDGEPORT, CAL.

Location.—At highway bridge in the NW. ¼ NW. ¼ sec. 23, T. 5 N., R. 24 E., three-fourths of a mile northwest of Mono ranger station, 4¼ miles northwest of Bridgeport.
Records avaliable.—June 1 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff on right bank 20 feet above bridge.
Channel.—Gravel and bowlders.
Discharge measurements.—Made from highway bridge.
Winter flow.—Affected by ice.
Cooperation.—Gage heights furnished by United States Forest Service.

Estimates are withheld until additional measurements are obtained.

Discharge measurements of Swager Creek near Bridgeport, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
June 17[a]	J. E. Stewart	4.02	140
July 25[b]	G. T. Peekema	2.88	31

[a] Measurement made by wading one-fourth of a mile below gage. [b] Made by wading.

Daily gage height, in feet, of Swager Creek near Bridgeport, Cal., for 1911.

[H. W. Atcheson and Clarence Wyatt, observers.]

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.60	3.38	.....	2.52	2.52	2.52	.....	16	4.10	3.20	.....	.....	2.52	.....	2.40
2	.....	.....	.....	.....	.....	.....	2.53	17	4.02	.....	.....	.....	.....	.....	.....
3	.....	3.26	2.76	.....	.....	.....	.....	18	.....	.....	.....	2.50	.....	2.38	.....
4	.....	.....	.....	.....	.....	2.50	.....	19	4.05	.....	2.60	2.45	2.52	.....	.....
5	3.90	.....	.....	.....	.....	.....	.....	20	4.04	3.07	.....	.....	.....	.....	.....
6	.....	3.30	2.60	.....	.....	2.52	.....	21	.....	.....	.....	.....	2.55	.....	.....
7	.....	3.15	.....	.....	2.07	.....	.....	22	3.90	.....	2.58	.....	.....	.....	.....
8	3.90	.....	2.68	.....	.....	.....	.....	23	.....	.....	.....	2.45	.....	.....	2.45
9	.....	.....	.....	.....	.....	.....	2.35	24	.....	2.88	.....	.....	2.55	.....	.....
10	.....	.....	.....	.....	2.05	.....	.....	25	3.66	.....	2.50	2.52	.....	2.38	.....
11	.....	.....	.....	.....	.....	.....	.....	26	3.60	.....	.....	.....	2.56	.....	.....
12	4.00	3.15	.....	.....	.....	.....	.....	27	.....	.....	.....	.....	.....	.....	.....
13	.....	.....	2.69	2.51	.....	2.38	.....	28	.....	.....	.....	.....	2.52	.....	.....
14	.....	.....	.....	.....	2.55	.....	.....	29	.....	2.90	2.55	.....	.....	.....	.....
15	.....	.....	.....	.....	.....	.....	.....	30	.....	.....	.....	2.59	.....	.....	2.35
								31	.....	.....	.....	.....	.....	.....	.....

NOTE.—No information regarding effect of ice.

CARSON-HUMBOLDT SINK BASIN.

EAST FORK OF CARSON RIVER AT SILVER KING VALLEY, NEAR MARKLEEVILLE, CAL.

Location —At lower end of Silver King Valley, in the NE. ¼ sec. 2, T. 8 N., R. 21 E., in the Mono National Forest, 300 feet above the mouth of Bagley Creek about 12 miles southeast of Markleeville.
Records available.—Fragmentary records during 1910–11.
Drainage area.—Not measured.
Gage.—Vertical staff fastened to a tamarack tree on left bank near dam site. Previous to March 30, 1911, the gage was located a short distance above the present one. The original datum has not been maintained.

Channel.—Gravel; appears permanent.

Discharge measurements.—Made from car and cable 600 feet above gage.

Winter flow.—Affected by ice.

Cooperation.—Gage heights furnished by United States Forest Service and discharge measurements by Stone & Webster Engineering Corporation.

Estimates are withheld until further data are obtained.

Discharge measurements of East Fork of Carson River at Silver King Valley, near Markleeville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 30	L. O. Murphy	[a] 2.45	184
July 29	Peekema and Murphy	[b] 2.60	278

[a] Old gage at damsite read 2.17 feet. [b] Old gage at damsite read 2.50 feet.

Gage height, in feet, of East Fork of Carson River at Silver King Valley near Markleeville, Cal., for 1910–11.

Date.	Gage height.	Date.	Gage height.	Date.	Gage height.
1910.		1911.		1911.	
Nov. 19	1.00	Feb. 18	2.95	May 27	3.35
26	1.00	27	2.70	June 23	3.85
Dec. 5	1.31	Mar. 2	2.65	29	3.20
11	1.21	18	1.50	July 26	3.80
17	1.28	25	2.00	29	2.60
24	1.28	30	2.45	Aug. 14	2.10
31	1.30	Apr. 7	2.50	Sept. 20	1.05
1911.		14	2.40	22	1.85
Jan. 7	1.49	22	2.55	Oct. 31	1.79
28	2.40	29	2.40	Nov. 21	1.70
Feb. 3	3.40	May 13	2.55	Dec. 14	2.20
		20	3.00		

NOTE.—Relation of gage height to discharge probably affected by ice Jan. 1 to about Mar. 15 and Dec. 1 to 31. Gage heights prior to Mar. 30, 1911, refer to the old gage at the damsite. Gage heights Mar. 18 and 25 liable to large error caused by disturbance of gage by ice.

EAST FORK OF CARSON RIVER NEAR MARKLEEVILLE, CAL.

Location.—At Hangman's bridge, in the NE. ¼ sec. 27, T. 10 N., R. 20 E., 2 miles east of Markleeville. Indian Creek enters 100 feet above gage and Markleeville Creek 1¼ miles below.

Records available.—November 13, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff 75 feet below the bridge, bolted to rock on right bank.

Channel.—Composed of gravel and small bowlders; appears permanent.

Discharge measurements.—Made from car and cable at stamp mill 3 miles above station where the Stone & Webster Engineering Corporation maintains a gage. At low and medium stages measurements are made by wading below the gage.

Winter flow.—Affected by ice.

Storage.—Low-water flow is augmented by storage developed on Silver Creek above the station.

Cooperation.—Gage heights furnished by United States Forest Service.

Estimates of discharge withheld pending the verification of the data.

Discharge measurements of East Fork of Carson River near Markleeville, Cal., in 1911.

Date.	Hydrographer.	Gage height.		Discharge at U.S.G.S. gage.
		Stone & Webster gage.	U.S.G.S. gage.	
		Feet.	*Feet.*	*Sec.-ft.*
Apr. 11[a]	J. E. Stewart	.....	4.28	423
June 12[b]	do	4.00	7.50	2,020
23[b]	do	3.68	6.50	1,640
July 28[b]	G. T. Peekema	2.52	4.85	517
Nov. 7[c]	J. E. Stewart	1.22	2.87	78

[a] Made by wading below U. S. Geol. Survey gage.
[b] Made from Stone & Webster's cable at stamp mill, 3 miles above U. S. Geol. Survey gage.
[c] Made by wading about 200 feet above dam near stamp mill.

Daily gage height, in feet, of East Fork of Carson River at Markleeville, Cal., for 1911.

[C. S. Bauder and John E. Smith, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.30	4.30	3.00	4.90	5.20	5.35	.....	.....	.....	.....	.....	.....
2	2.69	3.85	.....	.....	5.10	6.50	.....	.....	3.25	.....	.....	.....
3	2.75	3.87	2.90	5.25	5.40	.....	6.15	.....	.....	.....	.....	.....
4	2.76	3.55	2.90	5.00	5.55	.....	.....	.....	.....	3.10	2.80	.....
5	2.78	.....	.....	5.10	6.00	6.50	.....	4.10	3.20	.....	.....	.....
6	2.72	3.35	2.90	4.75	5.30	.....	.....	.....	.....	.....	.....	.....
7	2.81	3.12	.....	4.70	5.20	.....	6.15	.....	.....	3.17	2.87	.....
8	2.80	3.20	.....	4.60	5.20	.....	.....	.....	.....	.....	.....	.....
9	2.70	3.10	2.85	4.70	5.45	.....	6.00	.....	3.18	.....	.....	.....
10	2.72	3.30	2.90	4.45	5.40	6.78	.....	.....	.....	.....	2.80	.....
11	2.56	3.15	2.90	4.30	5.55	.....	5.98	.....	.....	3.20	2.40	.....
12	2.40	.....	.....	4.15	5.60	7.50	.....	3.70	.....	.....	.....	.....
13	2.38	3.00	2.90	4.05	5.55	.....	5.98	.....	.....	.....	.....	.....
14	2.70	2.85	2.90	4.00	5.50	.....	.....	.....	.....	.....	.....	2.40
15	.....	3.00	3.00	3.95	5.20	7.10	.....	3.50	.....	.....	.....	.....
16	.....	2.90	3.08	4.00	5.00	.....	5.90	.....	.....	.....	.....	.....
17	2.88	2.80	3.20	4.10	4.95	7.70	6.60	3.58	.....	.....	.....	.....
18	3.02	.....	3.50	4.28	4.95	7.05	6.50	.....	.....	2.90	2.80	.....
19	2.84	3.00	.....	4.70	5.30	.....	5.60	.....	.....	.....	.....	.....
20	.....	3.00	3.55	4.53	5.50	7.02	5.60	.....	3.00	.....	.....	.....
21	3.30	2.70	3.53	4.55	5.95	.....	.....	3.45	.....	2.90	2.85	.....
22	.....	2.85	3.75	5.00	6.00	.....	5.40	.....	3.05	.....	.....	.....
23	2.80	3.00	3.95	5.01	6.42	6.40	.....	.....	.....	.....	.....	3.65
24	3.38	2.95	4.05	5.40	6.55	.....	5.10	.....	.....	.....	.....	.....
25	3.08	2.98	4.08	5.60	6.00	.....	.....	.....	.....	.....	2.75	.....
26	2.90	2.80	4.20	5.95	5.90	6.00	4.60	.....	.....	.....	.....	.....
27	2.90	.....	4.00	5.55	5.80	6.20	.....	3.30	.....	.....	.....	.....
28	.....	3.05	4.15	5.20	.....	.....	4.85	3.35	.....	.....	.....	.....
29	2.90	.....	4.35	5.00	5.90	.....	.....	.....	.....	.....	.....	.....
30	5.50	.....	.....	5.00	.....	6.35	4.50	.....	3.05	2.90	.....	.....
31	5.30	.....	4.80	.....	5.55	.....	.....	3.30	.....	.....	.....	3.75

NOTE.—Relation of gage heights to discharge probably affected by ice Jan. 1 to Feb. 16 and Nov. 18 to Dec. 31.

CARSON RIVER AND BRUNSWICK MILL POWER CANAL NEAR EMPIRE, NEV.

Location.—At highway bridge at Brunswick Mill, in the SE. ¼ sec. 12, T. 15 N., R. 20 E., one-fourth of a mile below diversion dam of Brunswick Mill Power Co., and 2 miles below Empire.

Records available.—June 25 to December 31, 1895, and October 21, 1900, to December 31, 1911.

Drainage area.—988 square miles.

Gage.—A staff gage was installed on the left abutment of the bridge June 7, 1907. Previous to this time gages had been in use at other locations. On February 24, 1911, a staff gage was installed on the left bank a short distance below the tailrace of the Brunswick Mill power canal and about 1,000 feet below the bridge at an independent datum. The entire flow of the river passes this gage.

Channel.—Gravel and bowlders; appears permanent. At the old gage the channel is sandy and somewhat shifting.

Discharge measurements.—Made from car and cable about 50 feet above bridge. The discharge of Brunswick Mill power canal is also measured each time and added to the measured discharge of the river to give the total flow past the gage.

Winter flow.—Usually somewhat affected by ice.

Artificial control.—The Carson Valley, above this station, uses a considerable part of the summer flow for irrigation.

Accuracy.—Records since the installation of the new gage are excellent. On account of the uncertainty in the canal data, previous records are not as reliable.

Cooperation.—Gage heights furnished by United States Reclamation Service.

Records at this station include the return water from irrigation in Carson Valley and show amount of water available for use in Dayton Valley.

Discharge measurements of Carson River and Brunswick Mill power canal near Empire, Nev., in 1911.

Date.	Hydrographer.	Gage height, gage at bridge.	Discharge, river at bridge.	Discharge of Brunswick mill power canal.	Gage height, gage below tailrace.	Total discharge.
		Feet.	*Sec.-feet.*	*Sec.-feet.*	*Feet.*	*Sec.-feet.*
Feb. 24	H. D. McGlashan	4.02	244	159	4.10	403
Apr. 13	J. E. Stewart	5.44	785	150	4.90	935
June 9	do	7.60	3,300	49	7.00	3,350
10	D. S. Stuver	7.58	3,350	52	6.95	3,400
21	J. E. Stewart	8.00	4,380	57	7.60	4,440
July 2	D. S. Stuver	6.70	1,860	40	5.88	1,900
Aug. 1	G. T. Peekema	4.58	372	53	4.18	425
9	D. S. Stuver	3.58	126	83	3.70	209
Nov. 5	J. E. Stewart	3.42	88.3	75.4	3.66	164

Daily gage height, in feet, of Carson River near Empire, Nev., for 1911.

[D. I. Patterson, observer.]

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		4.0	5.5	5.3	6.3	6.2	3.5	3.3	3.4	3.6	3.8
2		4.0	5.6	5.4	6.1	6.2	3.4	3.3	3.4	3.7	3.7
3		4.1	5.7	5.3	5.8	6.1	3.4	3.3	3.5	3.8	3.8
4		4.0	5.7	5.4	6.2	5.8	3.4	3.3	3.6	3.8	3.7
5		4.1	5.8	5.7	6.4	5.8	3.3	3.4	3.6	3.7	3.6
6		4.2	5.7	6.0	6.7	5.8	3.3	3.5	3.7	3.7	3.7
7		4.6	5.7	5.8	7.0	5.9	3.4	3.4	3.7	3.8	3.7
8		5.3	5.5	5.6	7.0	5.9	3.5	3.3	3.7	3.8	3.7
9		5.4	5.4	5.4	7.0	5.8	3.7	3.3	3.6	3.9	3.8
10		5.3	5.3	5.5	6.9	5.7	3.7	3.3	3.7	3.9	3.8
11		5.0	5.2	5.5	7.0	5.7	3.7	3.3	3.7	3.9	3.7
12		4.9	5.1	5.6	7.3	6.0	3.7	3.2	3.7	3.8	3.8
13		4.8	4.8	5.7	7.4	6.0	3.7	3.2	3.6	3.7	3.6
14		4.7	4.7	5.7	7.3	5.9	3.6	3.1	3.6	3.7	3.7
15		4.6	4.5	5.7	7.5	5.9	3.6	3.2	3.6	3.7	3.7
16		4.6	4.6	5.5	7.4	6.0	3.5	3.1	3.6	3.7	3.7
17		4.6	4.6	5.3	7.5	5.9	3.4	3.1	3.6	3.9	3.8
18		4.6	4.7	5.3	7.5	5.8	3.2	3.1	3.7	3.9	3.6
19		4.6	4.8	5.2	7.6	5.9	3.2	3.2	3.7	3.9	3.7
20		4.7	4.9	5.4	7.6	5.8	3.2	3.2	3.6	3.8	3.7

Daily gage height, in feet, of Carson River near Empire, Nev., for 1911—Continued.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
21	.....	4.8	4.9	5.6	7.5	5.4	3.3	3.2	3.6	3.7	3.7
22	.....	5.0	4.9	6.0	7.4	5.1	3.4	3.2	3.6	3.7	3.7
23	.....	5.3	5.1	6.2	7.1	4.6	3.3	3.2	3.6	3.7	3.8
24	3.78	5.1	6.3	6.5	6.9	4.3	3.3	3.2	3.6	3.7	3.8
25	4.1	5.2	5.4	6.8	6.4	4.0	3.3	3.2	3.6	3.8	3.8
26	3.9	5.1	5.7	6.5	6.3	3.9	3.4	3.3	3.7	3.8	3.8
27	4.0	4.9	5.8	6.2	6.2	3.7	3.4	3.3	3.7	3.8	3.9
28	3.9	5.1	5.9	6.2	6.3	3.6	3.3	3.4	3.7	3.9	3.9
29	.....	5.2	6.0	6.1	6.5	3.5	3.2	3.4	3.7	3.8	3.8
30	.....	5.3	5.5	6.3	6.4	3.5	3.2	3.5	3.7	3.8	3.8
31	.....	5.4	.....	6.3	.....	3.5	3.3	.....	3.6	.....	4.5

NOTE.—Relation of gage height to discharge probably not affected by ice except on Dec. 17, when the effect was slight.

Daily discharge, in second-feet, of Carson River near Empire, Nev., for 1911.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	335	1,470	1,270	2,390	2,270	122	69	93	155	236
2	.....	335	1,580	1,370	2,150	2,270	93	69	93	194	194
3	.....	391	1,690	1,270	1,800	2,150	93	69	122	236	236
4	.....	335	1,690	1,370	2,270	1,800	93	69	155	236	194
5	.....	391	1,800	1,690	2,520	1,800	69	93	155	194	155
6	.....	450	1,690	2,030	2,950	1,800	69	122	194	194	194
7	.....	710	1,690	1,800	3,400	1,910	93	93	194	236	194
8	.....	1,270	1,470	1,580	3,400	1,910	122	69	194	236	194
9	.....	1,370	1,370	1,370	3,400	1,800	194	69	155	285	236
10	.....	1,270	1,270	1,470	3,250	1,690	194	69	194	285	236
11	.....	1,020	1,180	1,470	3,400	1,690	194	69	194	285	194
12	.....	940	1,100	1,580	3,890	2,030	194	50	194	236	236
13	.....	860	860	1,690	4,060	2,030	194	50	155	194	155
14	.....	780	780	1,690	3,890	1,910	155	36	155	194	194
15	.....	710	640	1,690	4,250	1,910	155	50	155	194	194
16	.....	710	710	1,470	4,060	2,030	122	36	155	194	194
17	.....	710	710	1,270	4,250	1,910	93	36	155	285	236
18	.....	710	780	1,270	4,250	1,800	50	36	194	285	155
19	.....	710	860	1,180	4,440	1,910	50	50	194	285	194
20	.....	780	940	1,370	4,440	1,800	50	50	155	236	194
21	.....	860	940	1,580	4,250	1,370	69	50	155	194	194
22	.....	1,020	940	2,030	4,060	1,100	93	50	155	194	194
23	.....	1,270	1,100	2,270	3,560	710	69	50	155	194	236
24	228	1,100	1,270	2,660	3,250	512	69	50	155	194	236
25	391	1,180	1,370	3,100	2,520	335	69	50	155	236	236
26	285	1,100	1,690	2,660	2,390	285	93	69	194	236	236
27	335	940	1,800	2,270	2,270	194	93	69	194	236	285
28	285	1,100	1,910	2,270	2,390	155	69	93	194	285	285
29	.....	1,180	2,030	2,150	2,660	122	50	93	194	236	236
30	.....	1,270	1,470	2,390	2,520	122	50	122	194	236	236
31	.....	1,370	.....	2,390	.....	122	69	.....	155	.....	640

NOTE.—Discharge Feb. 29 to Dec. 31 determined from a rating curve well defined above 120 second-feet.

Monthly discharge of Carson River near Empire, Nev., for 1911.

[Drainage area, 988 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	.....	.....	480	0.486	0.56	29,500	C.
February	.....	.....	605	.612	.64	33,600	C.
March	1,370	335	877	.888	1.02	53,900	A.
April	2,030	640	1,290	1.31	1.46	76,800	A.
May	3,100	1,180	1,800	1.82	2.10	111,000	A.
June	4,440	1,800	3,280	3.32	3.70	195,000	A.
July	2,270	122	1,400	1.42	1.64	86,100	A.
August	194	50	103	.104	.12	6,330	B.
September	122	36	65	.066	.07	3,870	B.
October	194	93	166	.168	.19	10,200	A.
November	285	155	229	.232	.26	13,600	A.
December	640	155	227	.230	.27	14,000	A.
The year	4,440	36	875	.886	12.03	634,000	

NOTE.—Discharge Jan. 1 to Feb. 23 estimated by means of gage heights and developed rating curve for the bridge station. To allow for discharge of power canal 102 second-feet was added to the discharge past the bridge for January and 131 second-feet for Feb. 1 to 23.

CARSON RIVER NEAR FORT CHURCHILL, NEV.

Location.—One mile west of Clifton station, on Mound House-Churchill branch of Southern Pacific Railroad, in sec. 5, T. 16 N., R. 23 E., 10 miles below Dayton, about 9 miles west of Fort Churchill.

Records available.—April 13 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Inclined staff on right bank and vertical high-water section 100 feet south.

Channel.—Sand; fairly permanent.

Discharge measurements.—Made at suspension gaging bridge 500 feet above gage.

Winter flow.—Somewhat affected by ice.

Artificial control.—Carson and Dayton valleys are irrigated from this stream.

Accuracy.—Rating curve well defined and results good.

Cooperation.—Gage heights and discharge measurements furnished by United States Reclamation Service.

This station is maintained to show the amount of water available from the Carson drainage basin for storage in the Lahontan reservoir now being constructed by the United States Reclamation Service for the Truckee-Carson project.

Discharge measurements of Carson River near Fort Churchill, Nev., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 13	D. S. Stuver	5.95	927
26	.....do	6.85	1,570
June 5	.....do	8.48	2,910
9	.....do	9.04	3,530
July 3	.....do	7.14	1,980
Aug. 7	.....do	3.99	282
8	.....do	3.90	248
23	.....do	3.14	72

Daily gage height, in feet, of Carson River near Fort Churchill, Nev., for 1911.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	6.48	7.70	7.68	4.60	3.00	3.25	3.55	3.85
2	.....	6.55	7.35	7.50	4.48	3.10	3.27	3.55	3.80
3	.....	6.50	7.60	7.14	4.40	3.05	3.35	3.58	3.90
4	.....	6.65	8.10	7.20	4.37	3.08	3.50	3.60	3.88
5	.....	6.90	8.48	7.25	4.20	3.00	3.50	3.62	3.85
6	.....	7.48	8.85	7.20	4.22	3.03	3.60	3.63	3.83
7	.....	7.15	9.10	7.15	3.95	3.07	3.62	3.65	3.85
8	.....	6.85	9.05	7.10	3.90	3.15	3.62	3.65	3.85
9	.....	6.80	9.00	7.10	3.85	3.10	3.52	3.65	3.85
10	.....	6.75	8.92	6.88	3.80	3.08	3.55	3.70	3.78
11	.....	6.70	8.97	6.70	3.72	3.03	3.55	3.70	3.73
12	.....	6.80	9.10	6.85	3.70	3.05	3.57	3.75	3.70
13	5.95	7.00	9.40	6.80	3.62	3.00	3.60	3.70	3.60
14	5.80	6.98	9.50	6.90	3.50	2.95	3.52	3.70	3.57
15	5.68	6.98	9.67	6.90	3.42	2.97	3.50	3.78	3.63
16	5.63	6.72	9.67	7.10	3.40	2.97	3.48	3.78	3.70
17	5.62	6.45	9.68	7.78	3.28	2.95	3.50	3.85	3.70
18	5.68	6.45	9.70	7.45	3.12	3.00	3.53	3.87	3.65
19	5.75	6.35	9.80	7.20	3.10	3.20	3.52	3.88	3.63
20	6.05	6.60	9.88	6.90	3.08	3.05	3.53	3.80	3.70
21	5.95	6.85	9.88	6.45	3.10	3.08	3.52	3.82	3.58
22	5.97	7.13	9.65	6.25	3.12	3.07	3.55	3.82	3.55
23	6.02	7.60	9.15	5.78	3.13	3.00	3.57	3.80	3.52
24	6.35	8.05	8.58	5.55	3.05	3.00	3.55	3.75	3.52
25	6.65	8.60	8.00	5.50	3.02	3.05	3.55	3.75	3.80
26	6.85	8.42	7.70	5.20	3.00	3.02	3.50	3.80	3.55
27	7.15	7.72	7.45	5.10	3.05	3.05	3.55	3.88	3.65
28	7.20	7.50	7.70	4.90	3.05	3.12	3.57	3.88	3.50
29	6.92	7.68	8.00	4.97	3.00	3.20	3.58	3.85	4.58
30	6.52	7.75	7.80	4.82	3.00	3.25	3.50	3.83	4.40
31	.....	7.85	.....	4.68	3.02	.....	3.55	.....	3.55

NOTE.—Ice Dec. 29 to 30.

Daily discharge, in second-feet, of Carson River near Fort Churchill, Nev., for 1911.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1,330	2,220	2,200	465	50	93	158	236
2	.....	1,370	1,940	2,060	427	66	97	158	222
3	.....	1,340	2,140	1,780	401	58	113	166	250
4	.....	1,440	2,580	1,820	391	63	146	171	244
5	.....	1,610	2,930	1,860	337	50	146	176	236
6	.....	2,040	3,300	1,820	343	55	171	178	230
7	.....	1,780	3,550	1,780	264	61	176	184	236
8	.....	1,580	3,500	1,750	250	74	176	184	236
9	.....	1,540	3,450	1,750	236	66	151	184	236
10	.....	1,500	3,370	1,600	222	63	158	196	217
11	.....	1,470	3,420	1,470	201	55	158	196	204
12	.....	1,540	3,550	1,580	196	58	164	209	196
13	1,020	1,680	3,850	1,540	176	50	171	196	171
14	950	1,670	3,950	1,610	146	43	151	196	164
15	890	1,670	4,140	1,610	128	46	146	217	178
16	865	1,480	4,140	1,750	123	46	141	217	196
17	860	1,310	4,150	2,290	99	43	146	236	196
18	890	1,310	4,170	2,020	69	50	154	242	184
19	920	1,250	4,380	1,820	66	83	151	244	178
20	1,080	1,400	4,470	1,610	63	58	154	222	196
21	1,020	1,580	4,470	1,310	66	63	151	228	166
22	1,040	1,770	4,120	1,190	69	61	158	228	158
23	1,060	2,140	3,400	940	71	50	164	222	151
24	1,250	2,540	3,030	830	58	50	158	209	151
25	1,440	3,050	2,490	810	53	58	158	209	222
26	1,580	2,870	2,220	690	50	53	146	222	158
27	1,780	2,240	2,020	650	58	58	158	244	184
28	1,820	2,060	2,220	570	58	69	164	244	146
29	1,620	2,200	2,490	598	50	83	166	236	150
30	1,350	2,260	2,310	542	50	93	146	230	154
31	.....	2,360	.....	493	53	.....	158	.....	158

NOTE.—Daily discharge determined from a rating curve well defined for all stages. Discharge estimated Dec. 29 to 30.

Monthly discharge of Carson River near Fort Churchill, Nev., for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
April 13–30	1,820	860	1,190	42,500	A.
May	3,050	1,250	1,790	110,000	A.
June	4,470	1,940	3,270	195,000	A.
July	2,290	493	1,430	87,900	A.
August	465	50	169	10,400	A.
September	93	43	59.2	3,520	B.
October	176	93	151	9,280	A.
November	244	158	207	12,300	A.
December	250	146	193	11,900	A.
The period				483,000	

SILVER CREEK NEAR MARKLEEVILLE, CAL.

Location.—In the SE. ¼ sec. 14, T. 9 N., R. 20 E., in the Mono National Forest, at Silver Creek, an abandoned post office, 10 miles above Markleeville.

Records available.—November 12, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to a juniper tree on the right bank 75 feet below foot-bridge.

Channel.—Gravel and bowlders; fairly permanent.

Discharge measurements.—Made from foot bridge at high stages.

Winter flow.—Affected by ice.

Storage.—Storage has been developed for use in irrigation at the Upper and Lower Kinney lakes and Kinney Meadows.

Accuracy.—Records are considered reliable.

Cooperation.—Gage heights furnished by United States Forest Service.

Discharge measurements of Silver Creek near Markleeville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 11[a]	J. E. Stewart	3.72	64
June 23	do	5.06	233
July 30[b]	G. T. Peekema	4.01	93
Nov. 7[a]	J. E. Stewart	2.77	5.7

[a] Made by wading 50 feet above gage. [b] Made from downstream side of bridge.

Daily gage height, in feet, of Silver Creek near Markleeville, Cal., for 1911.

[H. W. Jones, C. Wyatt, C. S. Bauder, and J. E. Smith, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1											2.80	
2					4.20						2.20	
3	2.90	5.00	3.00									
4				4.20								
5					4.50						2.00	
6	2.81										2.00	
7		3.30	3.00	3.90								
8												
9					4.32							
10	2.75	3.15	3.00			5.10						
11										3.10		
12					4.45							
13							4.06					
14		3.05	2.92	3.50								
15												

Daily gage height, in feet, of Silver Creek near Markleeville, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
16					4.20			3.40				
17	2.80	3.05	3.40					3.40				
18	2.75			3.95								
19					4.35	5.95						
20	4.00											
21		3.00	3.90	3.95								
22												
23					4.95	5.05						
24	3.50	3.00	3.50									
25				4.35								
26					4.55							
27	2.80							3.05				
28		3.00	3.90	4.20			4.00		2.90			
29								3.00	2.90			
30							4.00			2.80		
31	6.00		4.00							3.00		3.00

NOTE.—Probably no very great effect from ice.

Daily discharge, in second-feet, of Silver Creek near Markleeville, Cal., for 1910–11.

Day.	Dec.	Day.	Dec.	Day.	Dec.
1910.		1910.		1910.	
1	14	11	14	21	14
2	14	12	13	22	14
3	14	13	13	23	13
4	14	14	15	24	10
5	14	15	16	25	7
6	14	16	18	26	4
7	14	17	13	27	1
8	14	18	14	28	1
9	15	19	14	29	1
10	15	20	15	30	1
				31	8

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	16	533	19	108	120	180	106	88	14	10	7	
2	16	412	19	124	120	222	114	85	14	10	1	
3	16	292	19	140	137	264	122	81	12	12	1	
4	15	227	19	120	155	306	130	78	12	12	1	
5	14	163	19	108	172	348	125	74	12	12	1	
6	13	98	19	95	158	390	120	71	12	12	1	
7	13	33	19	82	144	373	115	67	12	14		
8	12	30	19	70	130	356	110	64	12	14		
9	12	28	19	80	138	339	105	60	12	16		
10	12	25	19	90	130	322	100	57	12	18		
11	12	24	19	79	146	350	95	53	12	19		
12	12	23	18	68	162	377	98	50	12	18		
13	12	22	17	57	151	405	100	46	11	17		
14	12	21	17	46	141	432	105	43	11	16		
15	12	21	24	56	131	460	110	40	11	14		
16	13	21	32	67	120	504	108	36	11	12		
17	13	21	29	77	128	547	106	36	11	10		
18	12	20	50	88	136	590	104	34	11	10		
19	52	20	61	99	144	633	102	32	11	10		
20	93	19	72	110	178	551	101	30	11	8		
21	56	19	82	88	211	470	100	28	11	8		
22	20	19	70	102	245	388	99	26	11	8		
23	33	19	58	116	278	307	98	24	10	8		
24	46	19	46	130	246	271	96	22	10	8		
25	35	19	55	144	214	235	95	20	10	8		
26	24	19	64	170	182	198	94	18	10	7		
27	13	19	73	145	181	162	93	16	10	7		
28	15	19	82	120	180	126	92	15	10	7		
29	228		86	120	185	90	92	14	10	7		
30	440		90	120	190	98	92	14	10	7		
31	653		93		185		92	14		14		14

NOTE.—Daily discharge determined from two rating curves fairly well defined between 20 and 350 second-feet, applicable Nov. 12, 1910, to June 19, 1911, and June 20 to Dec. 31, 1911. Gage heights Jan. 22 and 28; Apr. 3, 8, 10, 20, and 26; May 8, 10, 28, and 30; June 1, 6, 15, and 29, and July 4, 11, and 15, estimated from records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Silver Creek near Markleeville, Cal., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1910.					
December	18	1	11.7	719	C.
1911.					
January	653	12	62.7	3,860	C.
February	533	19	78.8	4,380	C.
March	93	17	43.2	2,660	B.
April	170	46	101	6,010	B.
May	278	120	166	10,200	B.
June	633	90	343	20,400	B.
July	130	92	104	6,400	C.
August	88	14	43.1	2,650	C.
September	14	10	11.3	672	D.
October	19	7	11.4	701	D.
November	.....	.....	10.0	595	D.
December	.....	.....	8.0	492	D.
The year	653	.....	81.5	59,000	

NOTE.—Discharge for November and December estimated.

MARKLEEVILLE CREEK[1] ABOVE MARKLEEVILLE, CAL.

Location.—At highway bridge above mouth of Pleasant Valley Creek, and three-fourths of a mile above Markleeville.

Records available.—November 7 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on left abutment of bridge.

Channel.—Gravel and small bowlders.

Discharge measurements.—Made from bridge at high water.

Winter flow.—Affected by ice.

Diversions.—Town ditch, which heads above the gage, furnishes water for irrigation and domestic use at Markleeville. In addition a small ditch diverts water for irrigation on Hot Springs ranch.

Cooperation.—Gage heights furnished by United States Forest Service.

The following discharge measurement was made by J. E. Stewart:
November 7, 1911: Gage height, 5.60 feet; discharge, 2.6 second-feet.

Gage height, in feet, of Markleeville Creek above Markleeville, Cal., for 1911.

Nov. 7	5.6
18	5.8
25	6.0
Dec. 12	6.0
15	5.2
24	5.8

NOTE.—Gage heights probably affected by ice Nov. 15 to Dec. 31.

[1] Known locally as Hot Springs Creek.

MARKLEEVILLE CREEK AT MARKLEEVILLE, CAL.

Location.—At the highway bridge at Markleeville, in the SE. ¼ sec. 21, T. 10 N., R. 20 E.

Records available.—November 11, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on left abutment of highway bridge.

Channel.—Composed of gravel and bowlders; banks high and not subject to overflow.

Discharge measurements.—Made from bridge.

Winter flow.—Probably affected by ice at times.

Diversions.—Two ditches divert water from Hot Springs Creek (the union of which with Pleasant Creek forms Markleeville Creek, three-fourths of a mile above the station); the upper ditch, which is small, irrigates the Hot Springs ranch; the lower, known as the Town ditch, was built in the early days to furnish water for domestic use at Markleeville, then a mining camp; later this ditch was rebuilt and extended to irrigate land below the town.

Cooperation.—Station maintained in cooperation with the United States Forest Service.

Discharge measurements of Markleeville Creek at Markleeville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 11[a]	J. E. Stewart	3.50	186
June 22	.....do	5.05	761
July 30[b]	G. T. Peekema	2.80	65
Nov. 6[c]	J. E. Stewart	1.88	9.4

[a] Made from bridge. No water in town ditch.
[b] Made from bridge. Town ditch measured 8.3 second-feet.
[c] Made by wading about 600 feet below gage. Town ditch measured 4.2 second-feet.

Daily gage height, in feet, of Markleeville Creek at Markleeville, Cal., for 1911.

[H. W. Jones, C. Wyatt, C. S. Bander, and John E. Smith, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.20	3.50	2.50	3.75	4.00	4.20	.....	.....	.....	.....	.....	2.10
2	2.11	3.30	.....	.....	4.00	.....	.....	.....	1.95	.....	.....	.....
3	2.08	3.28	2.50	4.02	4.10	.....	4.20	.....	.....	.....	.....	.....
4	2.18	3.05	2.50	3.90	4.40	.....	.....	.....	.....	1.90	1.90	.....
5	2.02	.....	.....	4.15	4.60	5.10	.....	2.70	1.88	.....	.....	.....
6	2.02	2.95	2.48	3.85	4.20	.....	.....	.....	.....	.....	.....	.....
7	2.01	2.90	.....	3.75	4.10	.....	4.05	.....	.....	1.92	.....	.....
8	1.95	2.80	.....	3.70	4.00	.....	.....	.....	.....	.....	.....	.....
9	1.99	2.85	2.48	3.80	4.20	.....	.....	.....	2.25	.....	.....	.....
10	2.30	2.80	2.48	3.65	4.10	5.15	.....	.....	.....	.....	.....	.....
11	2.20	2.78	2.48	3.50	4.20	.....	3.88	.....	.....	.....	2.00	.....
12	2.35	.....	.....	3.40	4.35	.....	.....	2.40	.....	.....	.....	2.20
13	2.70	2.68	2.53	3.90	4.30	.....	.....	2.30	2.05	.....	.....	.....
14	3.00	2.75	2.50	3.30	4.30	.....	.....	.....	1.90	.....	.....	.....
15	.....	2.75	2.53	3.28	3.95	5.30	3.85	.....	2.40	.....	.....	2.00
16	.....	2.95	2.55	3.30	3.90	.....	.....	.....	.....	.....	.....	.....
17	3.15	2.80	2.70	3.35	3.80	5.20	.....	.....	2.32	.....	.....	.....
18	3.00	.....	2.80	3.50	3.70	.....	.....	.....	.....	1.78	1.80	.....
19	2.80	2.58	.....	3.70	4.05	.....	3.40	.....	2.30	.....	.....	.....
20	.....	2.56	2.80	3.60	4.20	5.10	.....	.....	.....	.....	.....	.....
21	3.25	2.60	2.85	3.60	4.30	.....	.....	2.15	2.18	.....	.....	.....
22	2.65	2.78	2.90	3.95	4.70	.....	3.28	2.00	2.18	1.98	.....	2.20
23	3.00	2.58	3.10	4.00	5.00	4.70	.....	.....	.....	.....	.....	.....
24	2.65	2.55	3.18	4.05	5.20	.....	3.15	.....	.....	.....	.....	.....
25	2.50	2.58	3.30	4.20	4.55	.....	.....	.....	1.98	.....	1.95	.....
26	.....	2.30	.....	4.50	4.45	4.35	2.90	1.98	.....	.....	.....	.....
27	2.44	.....	3.18	4.35	4.40	4.85	3.01	.....	1.92	.....	.....	.....
28	.....	2.60	3.28	4.05	.....	.....	.....	.....	.....	.....	.....	.....
29	2.75	.....	3.40	3.90	4.55	.....	.....	.....	1.92	.....	.....	.....
30	4.80	.....	.....	3.95	.....	4.30	2.80	.....	.....	.....	1.97	.....
31	4.20	.....	4.12	.....	.....	.....	.....	1.90	.....	1.92	.....	2.40

NOTE.—Relation of gage heights to discharge probably affected by ice Dec. 16 to 31. Assumed no ice effect during remainder of year. Rise on Sept. 9 due to opening of Tamarack and Sunset reservoirs.

Daily discharge, in second-feet, of Markleeville Creek at Markleeville, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	25	178	44	235	305	372	386	68	13	13	13	20
2	20	140	44	274	305	478	360	66	14	12	12	20
3	19	137	44	312	338	583	372	64	13	12	12	20
4	24	102	44	275	452	689	381	62	12	12	12	22
5	17	95	44	355	540	795	390	60	11	12	12	22
6	17	88	43	262	372	770	351	57	15	13	13	22
7	16	82	43	235	338	780	322	54	20	18	13	22
8	14	70	43	222	305	750	302	50	24	13	14	24
9	16	76	43	248	372	786	281	47	28	12	15	24
10	31	70	43	211	338	822	260	44	26	12	16	24
11	25	68	43	178	372	840	270	40	23	10	16	25
12	34	63	44	158	432	858	250	37	21	10	15	25
13	60	58	46	275	412	877	260	31	18	9	14	22
14	95	65	44	140	412	896	270	30	12	9	13	21
15	102	65	46	137	290	915	262	29	37	9	12	20
16	109	88	48	140	275	888	236	28	34	9	11	.....
17	116	70	60	149	248	860	210	26	32	9	10	.....
18	95	60	70	178	222	838	184	25	32	8.6	9	.....
19	70	50	70	222	322	816	158	24	31	9	9	.....
20	101	49	70	200	372	795	146	23	28	12	10	.....
21	132	52	76	200	412	725	134	22	24	14	10	.....
22	56	68	82	290	585	655	123	16	24	15	11	.....
23	95	50	108	305	740	585	120	16	21	15	12	.....
24	56	48	120	322	680	534	116	16	18	15	13	.....
25	44	50	140	372	518	483	99	15	15	15	14	.....
26	42	31	130	495	474	432	82	15	14	14	14	.....
27	40	42	120	432	452	660	96	15	13	14	14	.....
28	52	52	137	322	485	578	88	14	13	14	14	.....
29	65	.....	158	275	518	495	79	14	13	13	15	.....
30	635	.....	252	290	470	412	70	13	13	13	15	.....
31	372	.....	345	.....	421	.....	70	12	.....	13	.....	.....

NOTE.—Daily discharge determined from a well-defined rating curve. Discharge June 6, 7, and 8, and July 2, 5, 10, 12, and 14 estimated from records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Markleeville Creek at Markleeville, Cal., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1910.					
November 11–30	13	4.9	7.40	294	C.
December	60	9.3	22.5	1,380	C.
1911.					
January	635	14	83.7	5,150	C.
February	178	31	73.8	4,100	C.
March	345	43	85.3	5,240	B.
April	495	137	257	15,300	A.
May	860	222	418	25,700	A.
June	915	372	699	41,600	A.
July	390	70	217	13,300	B.
August	68	12	33.3	2,050	B.
September	37	11	20.4	1,210	B.
October	15	8.6	12.1	744	C.
November	16	9	12.8	762	C.
December	25	.....	18.5	1,140	C.
The year	915		161	116,000	

NOTE.—Flow Dec. 16 to 31 estimated as 15 second-feet.

PLEASANT VALLEY CREEK NEAR MARKLEEVILLE, CAL.

Location.—At footbridge in the NW. ¼ sec. 28, T. 10 N., R. 20 E., 600 feet above junction with Hot Springs Creek, and three-fourths of a mile southwest of Markleeville.

Records available.—November 11, 1910, to November 11, 1911. Discontinued November 12, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to cottonwood tree on the left bank 25 feet above footbridge.

Channel.—Gravel and bowlders with control formed by large bowlders.

Discharge measurements.—Made from footbridge at high stages.

Winter flow.—Affected by ice.

Storage and diversion.—Several small reservoirs used in storing water for irrigation have been developed on the headwaters of this stream. Three irrigation ditches head above the station.

Accuracy.—Record considered reliable.

Cooperation.—Gage heights furnished by United States Forest Service.

Record discontinued after station on Markleeville Creek above Markleeville was established. Flow of this stream may be computed from records on Markleeville Creek above and below mouth of Pleasant Valley Creek.

Discharge measurements of Pleasant Valley Creek at Markleeville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 12[a]	J. E. Stewart	3.94	92
June 22[b]	do	5.04	331
July 30[a c]	G. T. Peekema	3.51	40
Nov. 6[a]	J. E. Stewart	2.92	4.8

[a] Wading measurement.
[b] Made at footbridge.
[c] Old gage at footbridge read 2.88 feet. J. Maisterrena's ditch measured 3.9 second-feet. J. E. Mayo's ditch measured 8.0 second-feet.

Daily gage height, in feet, of Pleasant Valley Creek near Markleeville, Cal., for 1911.

[H. W. Jones, C. Wyatt, and C. S. Bauder, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	3.10	4.20	3.40	4.20	4.40	4.55					
2	2.90	4.05			4.40				2.80		
3	3.01	4.04	3.40	4.40	4.45		4.40				
4	3.00	3.90	3.40	4.30	4.95					2.45	2.60
5	3.03			4.30	5.30	5.30		3.40	2.75		
6	3.08	3.75	3.40	4.10	4.60						
7	3.05	3.75		4.12	4.50		4.35			2.50	2.92
8	3.50	3.78		4.10	4.50						
9	3.50	3.75	3.40	4.20	4.55				3.20		
10	3.10	3.65	3.40	4.00	4.50	5.40					
11	3.07	3.65	3.40	4.00	4.60		4.20				2.95
12	2.30			3.95	4.80			3.20			
13		3.65	3.40	3.90	4.60	5.45					
14	2.70	3.60	3.40	3.90	4.60			3.00	2.85		
15		3.53	3.37	3.90	4.40		4.25		3.30		
16		3.65	3.39	3.95	4.20						
17	3.30	3.55	3.41	3.95	4.25	5.50			3.30		
18	3.00		3.45	4.00	4.20					2.90	
19	3.20	3.50		4.28	4.52		4.00		3.28		
20		3.48	3.50	4.00	4.60	5.35					
21	3.30	3.50	3.50	4.05	5.01					2.80	
22		3.50	3.53	4.05	5.40		3.35	3.00	3.15		
23	3.27	3.45	3.70	4.35	5.35						
24	3.43	3.40	3.78	4.55	5.45		3.80				
25	3.30	3.40	3.80	4.80	5.00		3.60		3.00		
26	3.25	3.70		5.00	4.95	4.50		2.98			
27	3.20		3.80	4.70					2.92		
28		3.40	3.85	4.50							
29			3.90	4.20	4.95				2.91		
30				4.20		4.10	3.50				
31			4.12		4.65			2.85		2.75	

NOTE.—Observer reports ice during January and February, but relation of gage heights to discharge was probably little affected by ice during this period. Rise in September caused by opening of Tamarack and Sunset reservoirs.

Daily discharge, in second-feet, of Pleasant Valley Creek near Markleeville, Cal., for 1910–11.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1		12	11	6.4	26	21	6.0	16
2		12	12	6.4	22	22	6.4	15
3		20	13	6.8	20	23	6.8	14
4		15	14	7.2	15	24	10	15
5		9.2	15	7.2	16	25	8.8	14
6		14	16	7.2	16	26	7.2	12
7		15	17	6.8	15	27	6.4	14
8		16	18	7.6	14	28	12	11
9		12	19	6.8	15	29	12	10
10		19	20	6.0	15	30	12	10
						31		10

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1911.											
1	15	126	34	126	164	195	128	39	4.5	5.0	3.1
2	6.0	103	34	145	164	255	146	38	4.0	4.0	2.8
3	10	102	34	164	174	315	164	36	4.0	3.0	2.4
4	10	84	34	144	306	375	162	35	3.5	1.2	2.0
5	12	75	34	144	435	435	159	34	3.5	1.3	3.6
6	14	66	34	110	206	450	156	32	8.0	1.4	5.2
7	12	66	34	113	184	435	154	30	12	1.5	6.8
8	42	70	34	110	184	420	147	28	16	1.9	7.1
9	42	66	34	126	195	450	140	26	20	2.3	7.4
10	15	55	34	96	184	480	133	24	17	2.7	7.7
11	14	55	34	96	206	487	126	22	14	3.1	8.0
12	0.5	55	34	90	260	495	128	20	11	3.5	.....
13	1.8	55	34	84	206	502	130	15	8.0	3.9	.....
14	3.0	50	34	84	206	518	132	10	5.0	4.3	.....
15	10	44	32	84	164	534	135	10	26	4.7	.....
16	18	55	33	90	126	550	126	10	26	5.1	.....
17	26	46	35	90	135	525	116	10	26	5.6	.....
18	10	44	38	96	126	502	106	10	26	6.0	.....
19	20	42	40	141	188	480	96	10	25	5.0	.....
20	35	40	42	96	206	458	74	10	22	5.0	.....
21	26	42	42	103	326	413	52	10	20	4.0	.....
22	25	42	44	103	480	368	30	10	18	4.0	.....
23	24	38	60	154	458	322	51	10	15	4.0	.....
24	36	34	70	195	502	276	72	10	12	4.0	.....
25	26	34	72	260	322	230	50	10	10	4.0	.....
26	23	60	72	322	306	184	48	9.2	8.4	4.0	.....
27	20	47	72	232	333	165	46	9.0	6.8	3.5	.....
28	86	34	78	184	360	147	44	8.0	6.6	3.5	.....
29	154	.....	84	126	306	128	43	7.0	6.4	3.5	.....
30	220	.....	98	126	262	110	42	6.0	6.0	3.5	.....
31	173	.....	113	.....	219	.....	40	5.0	.....	3.5	.....

NOTE.—Daily discharge determined from a fairly well defined curve for all stages. Discharge Jan. 30, May 28, and June 6, 8, and 16, 1911, estimated from records of flow of adjacent streams. Discharge interpolated for other days on which gage was not read.

Monthly discharge of Pleasant Valley Creek near Markleeville, Cal., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1910.					
November 11–30	12	6.0	7.80	309	C.
December	26	9.2	14.8	910	C.
1911.					
January	220	0.5	36.4	2,240	C.
February	126	34	58.2	3,230	C.
March	113	32	48.4	2,980	B.
April	322	84	134	7,970	B.
May	502	126	255	15,700	A.
June	550	110	373	22,200	A.
July	164	40	102	6,270	B.
August	39	5.0	17.5	1,080	C.
September	26	3.5	13.0	774	C.
October	6.0	1.2	3.61	222	C.
November 1–11	8.0	2.0	5.10	111	C.
The period	.....	.....	.....	62,800	

WEST FORK OF CARSON RIVER AT WOODFORDS, CAL.

Location.—At Woodfords, above highway bridge in the SE. ¼ sec. 34, T. 11 N., R. 19 E.

Records available.—April, 1890, to March, 1892; October 18, 1900, to December 31, 1911.

Drainage area.—70 square miles.

Gage.—October 18, 1900, to May 18, 1907, gage located at cable. June 8, 1907, to date, gage near highway bridge at Woodfords, one-half mile below site previously used. During portions of 1910 and 1911 gage records secured by the Stone & Webster Engineering Corporation are also available. These were read on a gage one-fourth of a mile above the cable.

Channel.—Composed of fine gravel and bowlders and is rough. The section is fairly permanent.

Discharge measurements.—Made from car and cable half a mile above the lower gage or by wading.

Winter flow.—Affected by ice.

Diversions.—Three irrigation ditches head between the cable and the lower gage. There is no record regarding these diversions. No water is diverted above the upper gage.

Accuracy.—Results January 1 to August 31, 1911, are good. For remainder of the year the data are not so reliable.

Cooperation.—Observations from upper gage furnished by Stone & Webster Engineering Corporation. Gage heights at lower gage furnished by United States Reclamation Service.

Discharge measurements of West Fork of Carson River at Woodfords, Cal., in 1910–11.

Date.	Hydrographer.	Gage heights.		Discharge.
		U. S. R. S. gage at bridge.	Stone & Webster gage above cable.	
1910.		*Feet.*	*Feet.*	*Sec.-ft.*
Dec. 10	Stone & Webster Engineering Corporation	.....	1.00	49
1911.				
Mar. 28	Stone & Webster Engineering Corporation	.....	1.50	95
Apr. 10	J. E. Stewart	2.40	1.85	[a] 149
June 9	Stone & Webster Engineering Corporation	.....	4.00	802
22	J. E. Stewart	4.43	3.86	[a] 797
July 20	Stone & Webster Engineering Corporation	.....	2.65	289
28	.....do	.....	2.15	175
28	G. T. Peekema	2.35	2.10	[a b] 192
Sept. —	Stone & Webster Engineering Corporation	.....	.81	43
Oct. 10	.....do	.....	.60	26
Nov. 6[c]	J. E. Stewart	.....	.68	30

[a] Made from cable half a mile above bridge. Canal diversions unknown.

[b] Discharge at highway bridge is 192–36=156 second-feet. West Carson ditches were carrying water as follows: Lower, 12.5 second-feet; middle, 13.4 second feet; upper, 9.8 second-feet.

[c] Wading 10 feet below Stone & Webster gage. Canal diversions unknown.

Daily gage height, in feet, of West Fork of Carson River at Woodfords, Cal., for 1911

[O. H. Rieff, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.55	0.95	0.90	2.20	2.70	3.90	3.30	1.90	1.25	1.20	1.10	1.60
2	.55	.90	.90	2.40	2.75	4.10	3.20	1.90	1.25	1.20	.....	1.60
3	.55	.85	.90	2.40	3.10	4.40	3.30	.....	.....	1.20	1.10	1.55
4	.65	1.00	.85	2.35	3.40	4.40	3.40	.....	.....	1.20	1.10	1.50
5	.65	1.00	.80	2.15	3.50	4.50	3.40	.....	1.20	1.20	1.10	1.50
6	.70	1.20	.85	2.05	2.90	4.20	3.40	1.70	1.20	1.15	1.10	1.40
7	.70	1.25	.85	2.00	2.85	4.30	3.30	1.60	1.20	1.10	1.15	1.40
8	.65	1.20	.80	2.05	3.10	4.10	3.30	.....	.....	1.10	1.20	1.40
9	.95	1.20	.80	2.00	3.00	4.30	3.30	1.50	.....	1.10	1.20	1.40
10	.55	1.20	.75	1.80	3.20	4.50	2.90	1.50	1.25	1.10	1.20	1.35
11	.50	1.15	.75	1.75	3.10	4.70	3.00	.....	1.25	1.10	1.20	1.30
12	.45	1.10	.75	.....	3.30	4.40	2.90	.....	1.20	1.10	1.20	1.30
13	.45	1.05	.80	1.70	3.30	4.80	3.00	1.40	.....	1.10	1.20	1.30
14	.50	1.00	.80	1.65	3.00	4.70	3.00	.....	.....	1.10	1.30	1.30
15	.55	1.00	.80	1.60	2.85	4.70	2.90	1.40	1.20	1.10	1.30	1.20
16	.60	1.00	.85	1.60	2.90	4.70	3.00	1.40	1.20	1.10	1.30	1.20
17	.55	1.00	.90	1.75	2.80	4.70	2.90	.....	.....	1.10	1.30	1.20
18	.55	1.00	.90	2.00	3.30	4.50	.....	.....	1.20	1.10	1.35	1.20
19	.50	.95	.95	2.20	3.40	4.50	2.65	1.30	1.20	1.10	1.38	1.20
20	.80	.95	1.00	2.20	3.70	4.50	2.65	1.30	.....	1.10	1.40	1.20
21	.65	.95	1.00	2.20	3.80	4.20	2.58	.....	1.10	1.10	1.40	1.20
22	.65	1.00	1.10	2.50	4.30	4.20	2.50	1.20	1.10	1.10	1.40	1.10
23	.65	.....	1.20	2.70	4.90	3.60	.....	1.20	1.10	1.10	1.45	1.10
24	.70	.....	1.20	2.85	4.20	3.40	.....	.....	1.10	1.10	1.50	1.10
25	.65	.....	1.20	3.00	3.80	3.30	.....	.....	1.10	1.10	1.55	1.10
26	.65	.....	1.25	3.00	3.80	3.40	.....	1.20	.....	1.10	1.58	1.10
27	.65	.....	1.35	2.90	4.00	3.70	2.15	1.20	.....	1.10	1.60	1.10
28	.60	.....	1.50	2.70	3.90	3.90	2.15	.....	1.20	1.10	1.60	1.10
29	1.00	.....	1.60	2.50	4.00	3.60	.....	.....	1.20	1.10	1.60	1.10
30	1.25	.....	1.75	2.60	3.80	3.40	.....	1.00	.....	1.10	1.65	1.10
31	1.10	.....	1.90	.....	3.50	.....	2.05	.....	.....	1.10	.....	1.15

NOTE.—Records Jan. 1 to Aug. 31 are from Stone & Webster's gage, one-fourth mile above the cable. Gage heights Sept. 1 to Dec. 31 refer to gage at highway bridge half a mile below cable. Relation of gage height to discharge probably unaffected by ice.

Daily discharge, in second-feet, of West Fork of Carson River at Woodfords, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	24	48	45	200	318	785	520	148	50	47	41	79
2	24	45	45	240	332	885	482	148	50	47	41	79
3	24	42	45	240	445	1,040	520	140	49	47	41	74
4	30	52	42	230	560	1,040	560	134	48	47	41	70
5	30	52	39	190	600	1,080	560	127	47	47	41	70
6	33	68	42	172	378	935	560	120	47	44	41	62
7	33	72	42	164	362	985	520	106	47	41	44	62
8	30	68	39	172	445	885	520	100	48	41	47	62
9	48	68	39	164	410	985	520	95	49	41	47	62
10	24	68	36	134	482	1,080	378	95	50	41	47	58
11	22	64	36	127	445	1,190	410	92	50	41	47	54
12	20	60	36	124	520	1,040	378	89	47	41	47	54
13	20	56	39	120	520	1,240	410	85	47	41	47	54
14	22	52	39	113	410	1,190	410	85	47	41	54	54
15	24	52	39	106	362	1,190	378	85	47	41	54	47
16	27	52	42	106	378	1,190	410	85	47	41	54	47
17	24	52	45	127	346	1,190	378	82	47	41	54	47
18	24	52	45	164	520	1,080	341	79	47	41	58	47
19	22	48	48	200	560	1,080	304	76	47	41	60	47
20	39	48	52	200	690	1,080	304	76	44	41	62	47

Daily discharge, in second-feet, of West Fork of Carson River at Woodfords, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
21	30	48	52	200	735	935	285	72	41	41	62	47
22	30	52	60	264	985	935	264	68	41	41	62	41
23	30	51	68	318	1,300	645	248	68	41	41	66	41
24	33	50	68	362	935	560	234	68	41	41	70	41
25	30	49	68	410	735	520	220	68	41	41	74	41
26	30	48	72	410	735	560	205	68	43	41	77	41
27	30	47	80	378	835	690	190	68	45	41	79	41
28	27	46	95	318	785	785	190	62	47	41	79	41
29	52	.....	106	264	835	645	184	57	47	41	79	41
30	72	.....	127	290	735	560	178	52	47	41	84	41
31	60	.....	148	.....	600	.....	172	51	.....	41	.....	44

NOTE.—Daily discharge Jan. 1 to Aug. 31 determined from a well-defined rating curve referred to the gage one-fourth mile above the cable. Discharge Sept. 1 to Dec. 31 determined from a fairly well defined curve referred to the bridge gage half a mile below the cable. Discharge January to August represents total flow of river. Discharge September to December more or less reduced by diversions above the gage. Discharge interpolated for days on which gage was not read.

Monthly discharge of West Fork of Carson River at Woodfords, Cal., for 1911.

[Drainage area, 70 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	72	20	31	0.443	0.51	1,910	B.
February	72	42	54	.771	.80	3,000	B.
March	148	36	57	.814	.94	3,500	B.
April	410	106	217	3.10	3.46	12,900	A.
May	1,300	346	590	8.43	9.72	36,300	A.
June	1,240	520	934	13.3	14.84	55,600	A.
July	560	172	362	5.17	5.96	22,300	A.
August	148	51	89	1.27	1.46	5,470	A.
September	50	41	46	.657	.73	2,740	B.
October	47	41	42	.600	.69	2,580	B.
November	84	41	57	.814	.91	3,390	B.
December	79	41	53	.757	.87	3,260	B.
The year	1,300	20	211	3.01	40.89	153,000	

HUMBOLDT RIVER AT PALISADE, NEV.

Location.—At highway bridge at Palisade, about 5 miles above mouth of Pine Creek and 100 feet below Southern Pacific Railroad bridge.

Records available.—November 27, 1902, to October 19, 1906, July 26 to December 31, 1911.

Drainage area.—5,010 square miles.

Gage.—Original gage was a vertical staff on right abutment of highway bridge. The high water in 1910 destroyed this bridge. On July 26, 1911, an inclined staff, at an independent datum, was installed on left bank near Southern Pacific Railroad bridge. December 1, 1911, a chain gage was installed at highway bridge with same datum as inclined staff.

Channel.—Sand and gravel; fairly permanent.

Discharge measurements.—Made from car and cable about one-eighth mile above gage.

Winter flow.—Affected by ice.

Cooperation.—Maintained in cooperation with Office of Experiment Stations, United States Department of Agriculture, through F. L. Peterson, irrigation engineer.

No discharge measurements were made in 1911 and estimates are accordingly withheld.

Daily gage height, in feet, of Humboldt River at Palisade, Nev., for 1911.

[Albini Siri, observer.]

Day.	July.	Aug.	Sept.	Oct	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.8	1.4	1.5	1.6	1.6	16	.....	1.5	1.4	1.6	1.8	1.8
2	.....	1.7	1.4	1.5	1.6	1.6	17	.....	1.5	1.4	1.6	1.8	1.8
3	.....	1.7	1.4	1.5	1.6	1.6	18	.....	1.5	1.4	1.6	1.8	1.7
4	.....	1.7	1.4	1.5	1.6	1.6	19	.....	1.5	1.4	1.6	1.8	1.9
5	.....	1.6	1.4	1.5	1.6	1.6	20	.....	1.5	1.4	1.6	1.8	1.8
6	.....	1.6	1.4	1.5	1.6	1.6	21	.....	1.5	1.4	1.6	1.7	1.7
7	.....	1.6	1.4	1.5	1.7	1.6	22	.....	1.5	1.4	1.6	1.7	1.7
8	.....	1.6	1.4	1.5	1.7	1.6	23	.....	1.4	1.4	1.6	1.7	1.7
9	.....	1.5	1.4	1.5	1.7	1.6	24	.....	1.4	1.4	1.6	1.7	1.8
10	.....	1.5	1.4	1.5	1.7	1.6	25	.....	1.4	1.4	1.6	1.7	1.7
11	.....	1.5	1.4	1.6	1.8	1.6	26	2.0	1.4	1.4	1.6	1.6	1.7
12	.....	1.5	1.4	1.6	1.8	1.7	27	2.0	1.4	1.4	1.6	1.6	1.8
13	.....	1.5	1.4	1.6	1.8	1.7	28	1.9	1.4	1.4	1.6	1.6	1.7
14	.....	1.5	1.4	1.6	1.8	1.7	29	1.9	1.4	1.4	1.6	1.6	.....
15	.....	1.5	1.4	1.6	1.8	1.7	30	1.8	1.4	1.4	1.6	1.6	.....
							31	1.8	1.4	.....	1.6	.....	.....

NOTE.—Gage heights probably affected by ice Dec. 12 to 31; stream frozen solid Dec. 29 to 31. Gage heights July to November not strictly comparable with those of December on account of change in location of gage.

HUMBOLDT RIVER NEAR GOLCONDA, NEV.

Location.—At highway bridge at extreme lower end of central valley of the Humboldt 1¼ miles north of Golconda, and about 12 miles above the mouth of Little Humboldt River.

Records available.—October 24, 1894, to December 31, 1909, and September 8, 1910, to December 31, 1911.

Drainage area.—10,800 square miles.

Gage.—Several gages at various datums and in various locations have been used at this station. November 5, 1910, the present chain gage was installed at the highway bridge.

Channel.—Sand and gravel and somewhat shifting.

Discharge measurements.—Made from highway bridge.

Winter flow.—Affected but little by ice.

Artificial control.—Diversions for irrigation above the station. The Taylor & Sheehan dam, about 2 miles above, and Pinson's dam, 5 miles above, regulate the flow at low stages.

Cooperation.—Maintained in cooperation with W. M. Kearney, State engineer, and Office of Experiment Stations, United States Department of Agriculture, through F. L. Peterson, irrigation engineer.

Estimates are withheld until additional measurements are made.

Discharge measurements of Humboldt River near Golconda, Nev., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
July 27[a]	F. L. Peterson	3.07	79
Aug. 7[a]	.....do	2.47	35
Nov. 3[b]	J. E. Stewart	1.78	.8
Dec. 3[c]	F. L. Peterson	2.00	12

a Made by Office of Experiment Stations, United States Department of Agriculture.
b Made by wading 200 feet above bridge.
c Made by Office of Experiment Stations, United States Department of Agriculture. River open at measuring section, but frozen over above and below.

Daily gage height, in feet, of Humboldt River near Golconda, Nev., for 1911.

[William and Adele Duyck, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.6	4.85	5.3	7.2	5.6	4.2	6.2	2.7	1.6	1.5	1.7	2.0
2	2.6	4.9	5.1	7.2	5.7	4.2	6.1	2.7	1.7	1.6	1.7	2.0
3	2.65	4.95	5.1	7.1	5.5	4.2	6.0	2.6	1.7	1.5	1.8	2.0
4	2.7	5.0	4.9	7.1	5.4	4.2	5.8	2.6	1.5	1.6	1.8	2.0
5	2.7	5.2	4.9	6.9	5.3	4.4	5.8	2.6	1.5	1.7	1.8	2.0
6	2.7	5.2	5.0	6.9	5.3	4.4	5.7	2.5	1.5	1.7	1.8	2.0
7	2.7	5.1	5.0	6.8	4.9	4.4	5.5	2.5	1.4	1.8	1.8	2.0
8	2.8	5.15	5.0	6.8	4.8	4.5	4.4	2.4	1.5	1.7	1.8	2.0
9	2.8	5.2	5.2	6.8	4.9	4.6	4.3	2.4	1.5	1.8	1.8	2.0
10	2.9	5.4	5.2	6.7	4.8	4.6	4.1	2.3	1.5	1.8	1.9	2.0
11	2.9	5.6	.....	6.7	4.8	4.8	4.1	2.3	1.5	1.7	1.9	2.0
12	3.0	5.6	5.3	6.6	4.8	4.9	4.0	2.3	1.5	1.8	1.9	2.0
13	3.0	5.7	5.5	6.6	4.7	4.9	3.9	2.2	1.5	1.7	1.9	2.0
14	3.0	5.8	5.6	6.6	4.5	5.0	3.9	2.1	1.4	1.8	1.9	2.0
15	3.1	5.8	5.7	6.6	4.5	5.1	3.8	2.1	1.5	1.7	1.9	2.0
16	3.1	6.0	5.8	6.7	4.5	5.2	3.8	2.0	1.5	1.6	1.9	2.0
17	3.1	5.9	5.8	6.5	4.4	5.3	3.7	1.9	1.5	1.7	1.8	2.0
18	3.2	5.9	5.9	6.4	4.4	5.3	3.7	1.9	1.4	1.6	1.7	2.0
19	3.2	5.9	6.0	6.3	4.4	5.5	3.6	1.8	1.5	1.7	1.7	2.0
20	3.3	5.9	6.0	6.3	4.4	5.6	3.4	1.6	1.5	1.7	1.8	2.0
21	3.5	5.8	6.0	6.3	4.4	5.7	3.4	1.6	1.4	1.6	1.9	2.2
22	4.0	5.8	6.1	6.3	4.4	5.7	3.1	1.5	1.5	1.7	2.0	2.2
23	4.0	5.75	6.2	6.2	4.3	5.8	3.1	1.3	1.5	1.6	2.0	2.2
24	4.1	5.7	6.3	6.2	4.3	5.8	3.1	1.3	1.5	1.7	2.1	2.2
25	4.1	5.6	6.5	6.1	4.2	5.8	3.0	1.2	1.4	1.7	2.1	2.2
26	4.4	5.5	6.6	6.0	4.2	5.8	3.0	1.0	1.5	1.5	2.1	2.2
27	4.5	5.5	6.7	5.95	4.2	5.9	3.1	1.0	1.5	1.6	2.1	2.2
28	4.6	5.3	6.8	5.9	4.2	6.0	2.8	1.0	1.5	1.6	2.1	2.2
29	4.6	.....	6.9	5.7	4.2	6.0	2.8	1.6	1.6	1.5	2.0	2.2
30	4.7	.....	6.9	5.7	4.2	6.1	2.8	1.7	1.6	1.7	2.0	2.2
31	4.7	.....	7.0	.....	.....	.....	2.8	1.7	.....	1.7	.....	2.2

NOTE.—Gage heights probably affected by ice Jan. 1 to 20 and Dec. 20 to 31.

HUMBOLDT RIVER NEAR OREANA, NEV.

Location.—At highway bridge at head of Lovelock Valley, about 1½ miles southwest of Oreana railroad station, about 25 miles northeast of mouth of river at Humboldt Lake, and 12 miles northeast of Lovelock, the nearest post office.

Records available.—January 27, 1896, to December 31, 1909, and September 7, 1910, to December 31, 1911.

Drainage area.—13,800 square miles.

Gage.—Original gage was located at old Oreana highway bridge. The abutment to which the gage was fastened was undermined and fell May 26, 1897. A temporary staff was used until September 8, 1897, when an inclined staff was installed on left bank, about 1½ miles above original gage at section house. This gage and bench marks were destroyed by high water. On November 29, 1902, a vertical staff, in two sections, was fastened to the piling at the old dam. October 1, 1904, the datum was lowered 2.00 feet. The high water of 1910 destroyed this gage and bench marks. September 7, 1910, this station was reestablished and a temporary vertical staff installed 150 feet above old bridge. On November 9, 1910, a vertical staff was fastened on the center pile of the bridge. On that date the reading was the same as that on the temporary gage.

Channel.—Shifting sand.

Discharge measurements.—Made from bridge at gage.

Winter flow.—Affected by ice.

Diversions.—Water diverted for irrigation above the station.

Accuracy.—Relation between gage height and discharge affected by shifting channel and, during the winter, by ice; records are only fair.

Cooperation.—Maintained in cooperation with W. M. Kearney, State engineer, and Office of Experiment Stations, United States Department of Agriculture, through F. L. Peterson, irrigation engineer.

Estimates are withheld until additional measurements are available.

Discharge measurements of Humboldt River near Oreana, Nev., in 1911.

Date.	Hydrographer.	Gage height.
		Feet.
July 13[a]	F. L. Peterson	4.50
July 19[a]	do	4.00
Aug. 4[a]	do	3.10
Nov. 4	J. E. Stewart	2.41
Dec. 4[a]	F. L. Peterson	2.40

[a] Made by United States Department of Agriculture.

Daily gage height, in feet, of Humboldt River near Oreana, Nev., for 1911.

[J. J. McCarthy, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.2	4.5	4.6	6.0	5.0	3.9	3.6	3.5	2.35	2.0	2.4	2.4
2	3.2	4.55	4.6	6.0	4.85	3.85	3.7	3.35	2.35	2.5	2.4	2.4
3	3.15	4.6	4.55	6.2	4.85	3.8	3.8	3.3	2.35	2.15	2.4	2.4
4	3.15	4.6	4.5	6.2	4.8	3.75	3.9	3.2	2.3	2.15	2.4	2.45
5	3.15	4.65	4.5	6.25	4.75	3.75	4.0	3.15	2.3	2.25	2.45	2.5
6	3.1	4.65	4.5	6.3	4.75	3.7	4.1	3.0	2.25	2.25	2.45	2.5
7	3.0	4.65	4.45	6.4	4.65	3.7	4.15	3.0	2.2	2.25	2.4	2.55
8	3.0	4.7	4.45	6.45	4.65	3.65	4.25	3.0	2.15	2.35	2.5	2.6
9	3.1	4.8	4.45	6.45	4.6	3.65	4.35	3.0	2.1	2.35	2.5	2.65
10	3.15	4.85	4.45	6.45	4.6	3.65	4.45	3.0	2.0	2.35	2.55	2.6
11	3.2	4.9	4.4	6.5	4.5	3.6	4.55	2.9	2.0	2.35	2.65	2.55
12	3.2	4.9	4.4	6.6	4.45	3.55	4.65	2.9	2.0	2.4	2.6	2.55
13	3.25	4.9	4.45	6.65	4.35	3.45	4.75	2.9	2.0	2.4	2.55	2.5
14	3.3	4.95	4.5	6.65	4.25	3.35	4.7	2.85	2.0	2.4	2.55	2.55
15	3.3	4.95	4.55	6.65	4.25	3.35	4.65	2.8	2.0	2.4	2.5	2.55
16	3.3	5.0	4.65	6.65	4.15	3.25	4.6	2.75	2.0	2.4	2.45	2.7
17	3.35	5.1	4.8	6.55	4.15	3.15	4.45	2.7	2.0	2.4	2.45	2.65
18	3.4	5.2	4.85	6.45	4.15	3.1	4.2	2.65	2.0	2.4	2.4	2.65
19	3.45	5.2	4.9	6.4	4.25	3.1	4.0	2.6	2.0	2.4	2.4	2.5
20	3.5	5.1	4.95	6.3	4.35	3.1	4.0	2.6	2.0	2.45	2.35	2.5
21	3.55	5.0	5.0	6.15	4.4	3.1	4.0	2.55	2.0	2.45	2.35	2.6
22	3.55	5.0	5.2	6.05	4.4	3.0	4.0	2.5	2.0	2.45	2.4	2.7
23	3.6	4.95	5.45	6.0	4.35	3.0	3.95	2.5	2.0	2.45	2.4	2.75
24	3.65	4.85	5.5	5.75	4.3	3.0	3.9	2.5	1.95	2.45	2.4	2.75
25	3.7	4.7	5.5	5.7	4.3	3.0	3.85	2.5	1.95	2.45	2.35	2.75
26	3.8	4.7	5.55	5.6	4.25	3.2	3.8	2.5	1.9	2.45	2.35	2.75
27	4.0	4.65	5.6	5.55	4.25	3.3	3.75	2.45	1.9	2.45	2.35	2.8
28	4.3	4.6	5.65	5.35	4.15	3.4	3.7	2.45	1.9	2.45	2.3	2.8
29	4.35	.....	5.75	5.2	4.1	3.45	3.65	2.4	1.85	2.45	2.3	2.8
30	4.35	.....	5.8	5.1	4.1	3.55	3.6	2.4	1.85	2.45	2.35	2.85
31	4.4	.....	5.95	.....	4.0	.....	3.6	2.4	.....	2.45	.....	2.85

NOTE.—Relation of gage height to discharge probably affected by ice Jan. 1 to 29, Feb. 3 to 12, and Nov. 8 to Dec. 31.

NORTH FORK OF HUMBOLDT RIVER NEAR HALLECK, NEV.

Location.—About one-fourth mile above mouth, 2 miles west of Elburz station on Southern Pacific Railroad, and 6 miles west of Halleck.

Records available.—October 10, 1902, to December 31, 1909, and October 1, 1910, to December 31, 1911.

Drainage area.—1,020 square miles.

Gage.—Staff in two sections on left bank installed August 5, 1909, at same datum as original inclined staff.

Channel.—Sand and gravel and somewhat shifting.

Discharge measurements.—Made from car and cable near gage.

Winter flow.—Affected by ice.

Artificial control.—There are several diversions for irrigation above the station.

Cooperation.—Maintained in cooperation with W. M. Kearney, State engineer.

Estimates are withheld until additional measurements can be made.

The following discharge measurement was made by J. E. Stewart by wading 200 feet above gage; ice along banks:

November 2, 1911: Gage height, 2.97 feet; discharge, 9.9 second-feet.

Daily gage height, in feet, of North Fork of Humboldt River near Halleck, Nev., for 1911.

[Frank E. Schroeder, observer.]

Day.	Jan.	Feb.	Mar	Apr	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	3.7	2.8	2.4	2.5	2.9	3.0
2	.....	.....	.....	4.5	.....	.....	3.6	2.8	2.4	2.6	2.9	3.0
3	.....	4.4	.....	5.0	.....	.....	3.6	2.7	2.4	2.6	2.9	3.0
4	.....	4.4	3.8	4.8	.....	3.6	3.6	2.7	2.4	2.6	2.9	3.0
5	.....	4.2	4.0	4.6	.....	3.65	3.6	2.7	2.4	2.6	2.9	3.0
6	.....	4.2	4.0	4.6	.....	3.7	3.5	2.7	2.4	2.6	3.0	3.0
7	.....	4.0	4.2	4.4	.....	3.9	3.5	2.6	2.4	2.6	3.0	3.0
8	.....	3.4	5.0	4.4	.....	3.9	3.4	2.6	2.5	2.6	3.0	3.0
9	.....	3.4	6.0	4.4	.....	3.9	3.3	2.6	2.5	2.6	3.0	3.0
10	.....	3.8	6.0	4.2	.....	4.0	3.2	2.6	2.5	2.6	3.0	3.0
11	.....	4.2	5.0	4.0	.....	4.0	3.2	2.6	2.5	2.6	3.0	3.0
12	.....	3.4	5.8	4.0	.....	4.0	3.2	2.6	2.5	2.6	3.0	3.0
13	.....	3.6	5.4	3.8	.....	4.0	3.1	2.6	2.5	2.6	3.0	3.0
14	.....	3.6	5.0	3.8	.....	4.1	3.0	2.6	2.5	2.6	3.0	3.0
15	.....	3.6	4.6	3.6	.....	4.2	2.9	2.5	2.5	2.7	3.0	3.0
16	.....	3.6	4.4	.....	.....	4.4	2.9	2.5	2.5	2.7	3.0	3.0
17	.....	4.0	4.8	.....	.....	4.5	2.9	2.4	2.5	2.7	3.0	3.0
18	.....	4.0	5.0	.....	.....	4.65	3.0	2.4	2.5	2.8	3.0	3.0
19	.....	4.0	5.0	.....	.....	4.7	3.0	2.4	2.5	2.8	3.0	3.0
20	4.2	.....	5.0	.....	.....	4.7	3.0	2.4	2.5	2.8	3.0	3.0
21	4.4	.....	5.0	.....	.....	4.6	3.0	2.4	2.5	2.8	3.0	3.0
22	4.6	.....	5.0	.....	.....	4.55	3.0	2.4	2.5	2.8	3.0	3.0
23	4.6	.....	5.2	.....	.....	4.5	3.0	2.4	2.5	2.8	3.0	3.0
24	4.6	.....	5.0	.....	.....	4.5	3.0	2.4	2.5	2.8	3.0	3.0
25	4.6	.....	5.0	.....	.....	4.35	2.9	2.4	2.5	2.9	3.0	3.0
26	4.6	.....	4.8	.....	.....	4.1	2.9	2.4	2.5	2.9	3.0	3.0
27	4.6	.....	4.4	.....	.....	4.0	2.9	2.4	2.5	2.9	3.0	3.0
28	4.6	.....	4.4	.....	.....	3.9	2.9	2.4	2.5	2.9	3.0	3.0
29	4.7	.....	4.2	.....	.....	3.8	2.9	2.4	2.5	2.9	3.0	3.0
30	4.7	.....	4.4	.....	.....	3.8	2.9	2.4	2.5	2.9	3.0	3.0
31	4.7	.....	4.4	.....	.....	.....	2.9	2.4	.....	2.9	.....	3.0

NOTE.—Relation of gage heights to discharge probably affected by ice January and February and Nov. 6 to Dec. 31.

SOUTH FORK OF HUMBOLDT RIVER NEAR ELKO, NEV.

Location.—About 12 miles southwest of Elko, below all tributaries, and 6 miles above the mouth.

Records available.—August 29, 1896, to December 31, 1909, and September 9, 1910, to December 31, 1911.

Drainage area.—1,150 square miles.

Gage.—Original gage was an inclined staff on right bank at Cislini's (formerly Mason's) ranch. November 22, 1902, this gage was replaced by a new inclined staff at same location. The original datum was maintained. A new gage, at an independent datum, was installed May 21, 1905, below a dam which was built just below old gage. September 7, 1905, the datum was lowered 1 foot. On February 26, 1907, an inclined staff, at an independent datum, was installed above highway bridge on left bank about 1,000 feet above former gage.

Channel.—Sand. Somewhat shifting.

Discharge measurements.—Made from car and cable just below gage.

Winter flow.—Affected by ice.

Cooperation.—Maintained in cooperation with W. M. Kearney, State engineer.

Estimates are withheld until additional measurements are available.

Discharge measurements of South Fork of Humboldt River near Elko, Nev., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Nov. 1 *a*	J E. Stewart	1.07	12
1 *b*	.....do	1.07	11

a Made by wading at gage.
b Made by wading just below ford at Cowling's ranch, about half a mile below gage.

Daily gage height, in feet, of South Fork of Humboldt River near Elko, Nev., for 1911.

[James Cowling, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.0	2.7	2.0	2.1	1.9	2.5	2.05	1.0	.....	0.8	1.1	1.5
2	2.0	2.3	1.95	2.0	1.9	2.8	2.0	1.0	.....	.8	1.1	1.5
3	2.0	1.9	1.95	2.05	1.9	2.9	2.0	1.0	.....	.9	1.15	1.5
4	2.0	1.75	1.8	2.1	1.95	3.0	2.0	1.0	.....	.9	1.15	1.5
5	2.0	1.7	1.7	2.2	2.1	3.15	1.9	1.0	.....	.9	1.1	1.5
6	2.0	1.6	1.6	2.2	2.3	3.45	1.9	.9	.....	.8	1.1	1.5
7	2.0	1.8	1.45	2.15	2.4	3.6	1.8	.9	.....	.8	1.1	1.5
8	2.0	1.8	1.45	2.05	2.5	3.7	1.65	.8	.....	.8	1.1	1.5
9	2.0	1.95	1.65	2.0	2.5	3.7	1.6	.8	.....	.8	1.1	1.5
10	2.1	1.8	1.9	1.95	2.5	3.7	1.55	.7	.....	.8	1.1	1.5
11	2.1	1.8	2.0	1.9	2.4	3.85	1.5	.7	.....	.9	1.3	1.5
12	2.1	1.9	1.85	1.85	2.35	4.3	1.45	.7	.....	.9	1.3	1.5
13	2.1	2.0	1.85	1.85	2.3	4.65	1.4	.7	.....	1.0	1.2	1.5
14	2.1	2.1	1.65	2.05	2.3	4.7	1.4	.7	.....	1.0	1.15	1.5
15	2.1	2.15	1.65	1.95	2.3	4.65	1.3	.6	.....	1.0	1.15	1.5
16	2.1	2.15	1.85	1.9	2.3	4.55	1.3	.6	.....	1.0	1.15	1.5
17	2.1	2.1	1.85	1.85	2.3	4.35	1.2	.6	.....	1.1	1.15	1.5
18	2.1	2.1	1.85	1.85	2.3	4.2	1.2	.6	.....	1.1	1.15	1.5
19	2.1	2.1	1.85	1.8	2.25	4.1	1.2	.6	.....	1.1	1.15	1.5
20	2.55	2.1	1.85	1.75	2.2	4.1	1.1	.6	0.6	1.1	1.15	1.5

Daily gage height, in feet, of South Fork of Humboldt River near Elko, Nev., for 1911— Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
21	2.85	2.1	1.85	1.75	2.2	4.0	1.15	0.6	0.7	1.1	1.2	1.5
22	2.6	2.1	1.85	1.75	2.2	3.65	1.2	.6	.7	1.1	1.25	1.5
23	2.6	2.1	1.85	1.75	2.3	3.35	1.2	.6	.7	1.1	1.4	1.5
24	2.6	2.1	2.1	1.75	2.3	3.15	1.2	.6	.7	1.1	1.35	1.5
25	5.8	2.1	1.95	1.75	2.4	2.95	1.1	.6	.7	1.1	1.25	1.5
26	4.6	2.1	1.85	1.85	2.5	2.9	1.1	.6	.7	1.1	1.3	1.5
27	4.0	2.1	1.85	1.95	2.6	2.75	1.0	.....	.7	1.1	1.35	1.5
28	3.55	2.1	1.85	2.05	2.55	2.6	1.0	.....	.7	1.1	1.4	1.5
29	3.3	.....	1.85	1.95	2.45	2.45	1.0	.....	.7	1.1	1.5	1.5
30	2.95	.....	1.85	1.9	2.4	2.25	1.0	.....	.8	1.1	1.5	1.5
31	2.6	.....	2.0	.....	2.4	.....	1.0	.....	.....	1.1	.....	1.5

NOTE.—Ice probably affected gage heights Jan. 1 to 29, Feb. 1 to Mar. 3, and Nov. 3 to Dec. 31. Mush ice noted Apr. 14. Aug. 27 to Sept. 10, water standing in pools. Sept. 11 to 13, river dry.

PYRAMID AND WINNEMUCCA LAKES BASIN.

LAKE TAHOE AT TAHOE, CAL.

Location.—Near the outlet of the lake in the SE. ¼ sec. 6, T. 15 N., T. 17 E.

Records available.—1900 to 1911.

Drainage area.—519 square miles (including water surface of lake).

Gage.—Staff; datum, 6,220 feet above sea level.

The following table summarizes the fluctuations of the lake for the past 24 years as far as they have been recorded:

Water-surface fluctuation of Lake Tahoe from 1888 to 1911.

Year.	High water.		Low water.		Extreme range.
	Gage height.	Date.	Gage height.	Date.	
	Feet.		*Feet.*		*Feet.*
1888	4.90	Sept. 8	.....	.....	.....
1889	4.60	Spring	3.05	October	1.55
1890	8.55±	.....	.....	.....	.....
1895	9.02	July 7	7.55	Dec. 17 [a]	1.47
1900	7.00	June 17	5.87	Oct. 17 [b]	1.17
1901	8.43	July 27	6.10	Jan. 1	2.33
1902	9.02	June 22	6.97	Dec. 5	2.05
1903	8.90	July 5	6.80	Jan. 21	2.10
1904	10.40	June 22	7.10	Feb. 5	3.30
1905	8.70	June 18	6.20	Dec. 23	2.50
1906	9.87	July 21	6.16	Jan. 5	3.71
1907	11.26	July 14	7.80	Jan. 19	3.46
1908	8.40	Jan. 1	6.10	Dec. 31	2.28
1909	8.88	July 11	6.10	Jan. 1	2.78
1910	8.48	June 2–11	5.80	Dec. 1–2	2.68
1911	9.21	July 19–21	5.74	Jan. 8–9	3.47

[a] The lake was also low in January.

[b] Lower earlier in year, no record.

NOTE.—Records for 1888 to 1890 were reported by W. H. Hall.

Daily gage height, in feet, of Lake Tahoe at Tahoe, Cal., for 1911.

[J. N. Haley, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.80	.....	.....	7.14	7.37	8.10	.....	9.05	8.56	.....	.....	7.29
2	5.80	7.10	.....	7.16	7.40	8.12	9.10	9.05	8.55	.....	.....	7.28
3	5.80	7.10	.....	7.18	.....	8.14	9.10	9.05	8.52	.....	.....	7.27
4	5.79	7.10	7.00	7.18	7.48	8.18	9.10	8.98	8.50	.....	7.48	7.26
5	5.79	7.10	.....	.....	.....	8.22	9.10	8.98	.....	.....	.....	7.26
6	5.78	7.10	.....	7.30	7.60	8.22	9.10	8.95	.....	7.80	.....	7.26
7	5.76	7.10	.....	7.30	7.60	.....	.....	8.95	.....	.....	7.48	.....
8	5.74	7.10	7.15	.....	7.60	8.32	.....	8.93	8.40	.....	.....	.....
9	5.74	7.10	7.32	.....	7.60	8.41	9.15	8.90	.....	.....	.....	7.28
10	5.79	7.11	7.32	.....	7.60	8.45	9.16	8.90	.....	.....	.....	7.27
11	5.90	7.12	7.30	.....	7.65	8.48	9.16	8.90	.....	7.76	.....	7.26
12	.....	7.13	.....	.....	.....	8.54	9.18	8.90	.....	.....	.....	.....
13	.....	.....	.....	.....	.....	8.60	9.18	8.90	.....	.....	.....	7.26
14	.....	.....	.....	.....	.....	8.66	9.18	.....	8.34	.....	.....	7.23
15	6.30	7.14	7.20	7.32	.....	8.70	9.19	.....	8.32	.....	.....	7.22
16	6.30	7.15	7.20	7.32	.....	8.73	9.20	8.80	8.30	.....	.....	7.21
17	6.30	7.15	7.20	7.30	.....	8.78	9.20	8.80	.....	7.70	7.38	.....
18	6.33	7.15	7.20	.....	.....	8.83	9.20	8.78	.....	7.68	7.38	.....
19	.....	.....	7.20	7.30	.....	8.88	9.21	8.76	.....	7.66	7.37	7.18
20	.....	7.14	7.20	7.26	7.73	8.93	9.21	8.75	8.10	7.66	7.37	.....
21	6.45	7.14	7.20	7.26	7.76	.....	9.21	8.73	.....	7.64	7.37	.....
22	6.45	7.13	7.20	7.27	7.80	8.96	9.20	8.72	.....	7.64	7.37	7.15
23	6.45	7.12	7.20	7.28	.....	.....	9.18	8.70	.....	7.64	7.37	7.15
24	.....	7.11	7.20	7.28	.....	8.98	9.15	8.67	.....	7.62	7.37	.....
25	.....	7.10	7.20	7.30	.....	9.00	9.15	8.65	.....	7.60	7.36	7.05
26	6.50	7.10	7.20	7.31	.....	9.00	9.08	8.65	.....	.....	7.35	7.00
27	6.50	.....	7.17	7.31	7.90	.....	9.08	8.64	.....	.....	7.34	.....
28	6.60	.....	7.15	7.31	7.93	9.06	9.08	8.62	7.95	7.57	7.32	.....
29	6.70	.....	7.14	7.33	7.93	.....	9.08	8.60	.....	7.53	7.30	7.00
30	6.84	.....	7.14	7.33	7.97	9.10	9.08	8.58	.....	7.50	7.29	7.00
31	.....	.....	7.14	.....	8.04	.....	9.08	8.58	.....	.....	.....	.....

NOTE.—On days of missing gage heights the observer notes "Lake too rough for accurate reading of gage."

EVAPORATION AT LAKE TAHOE, CAL.

The following tables showing evaporation at Lake Tahoe have been taken from studies made by Edwin Duryea, jr.,[1] of Duryea, Haehl & Gilman, San Francisco, Cal. Table 1 records actual observations, estimated monthly and yearly totals, and the ratios of the evaporation in each month to the yearly total, expressed in percentage. The estimated monthly total was obtained by filling in the gaps of the record. This was done by taking into consideration the records immediately preceding and following and the climatologic conditions during the period. The estimates are believed to be conservative in that they give a greater evaporation than actually occurred.

Table 2 summarizes the data presented in the first and gives a maximum, minimum, and mean value for the period for each month and also percentage values for comparative purposes.

The yearly mean evaporation for the period is found to be 30.59 inches, and Mr. Duryea has assumed a safe yearly evaporation of 36 inches.

A climatologic year beginning with September and ending with August has been used in the tabulation.

[1] See Eng. News, Feb. 29, 1912.

TABLE 1.—*Monthly and yearly evaporation at Lake Tahoe, 1899–1906.*

[As estimated from daily observations of the United States Geological Survey and the United States Reclamation Service.]

Month.	1899–1900.[c]		1900–1901.[c]		1901–2.				1902–3.				1903–4.			
					Observed evaporation.		Estimated monthly total.		Observed evaporation.		Estimated monthly total.		Observed evaporation.		Estimated monthly total.	
	Inches.	Per cent of total for year.	Inches.	Per cent of total for year.	Days.	Inches.	Inches.	Per cent of total for year.	Days.	Inches.	Inches.	Per cent of total for year.	Days.	Inches.	Inches.	Per cent of total for year.
September			3.10	11			4.12	16	24	2.80	3.40	10	25	3.88	4.27	14
October			2.15	7			2.65	10	0		[a] 3.09	9	24	2.78	3.33	11
November			1.38	5			2.09	8	0		[a] 2.15	6	9	.64	2.53	8
December			1.33	5			1.44	6	4	.25	.85	3	23	1.18	1.44	5
January			.84	3	9	0.35	1.02	4	7	.35	.70	2	18	.72	1.17	4
February			.70	2	4	.15	.87	4	0		.84	3	7	.20	.47	1
March			.77	3	0		[a] 1.24	5	13	1.15	1.88	6	1	.10	.56	2
April			1.25	4	0		[a] 1.85	7	15	1.50	2.75	8	21	.94	1.38	4
May	[a b] 2.44		2.42	9	5	.30	1.08	4	28	3.05	3.20	10	24	2.70	3.19	10
June	3.80		3.35	12	21	1.90	2.45	10	24	3.40	3.90	12	26	3.24	3.80	12
July	4.00		[a] 4.42	16	29	3.20	3.40	13	10	1.42	5.62	17	31	4.42	4.42	14
August	5.15		6.50	23	26	3.20	3.45	13	29	4.36	4.66	14	25	3.82	4.73	15
The year			28.21	100			25.66	100			33.04	100			31.29	100
Per cent of yearly mean 1900–1901 to 1905–6			92				84				108				102	

Month.	1904–5.				1905–6.				1906–7.			
	Observed evaporation.		Estimated monthly totals.		Observed evaporation.		Estimated monthly totals.		Observed evaporation.		Estimated monthly totals.	
	Days.	Inches.	Inches.	Per cent of total for year.	Days.	Inches.	Inches.	Per cent of total for year.	Days.	Inches.	Inches.	Per cent of total for year.
September	21	2.56	3.27	10	26	4.38	4.74	15	25	3.52	3.94	
October	15	1.62	2.86	8	29	3.66	3.82	12	29	3.44	3.70	
November	16	1.62	2.77	8	17	1.78	2.78	9	5	.42	1.35	
December	18	1.06	1.59	5	22	1.58	1.85	6	0		.62	
January	20	1.33	1.81	5	10	.50	1.12	4				
February	17	.95	1.30	4	3	.18	.98	3				
March	12	.98	1.78	5	11	.64	1.20	4				
April	22	2.08	2.46	7	14	.83	1.42	4				
May	15	1.64	2.50	7	17	1.64	2.26	7				
June	23	3.12	3.57	11	13	1.49	2.39	8				
July	31	4.76	4.76	14	31	4.30	4.30	14				
August	26	4.60	5.27	16	25	3.80	4.55	14				
The year			33.94	100			31.41	100				100
Per cent of yearly mean 1900–1901 to 1905–6	111				103							

[a] Filled in by using mean of all Octobers, Novembers, etc.
[b] Observed May 17 to 31, 14 days=1.83 inches.
[c] Value for 1899–1901 taken from Water Supply Paper U. S. Geol. Survey No. 68.

TABLE 2.—*Maximum, minimum, and mean evaporation at Lake Tahoe in each month from September, 1900, to August, 1906.*

Month.	Maximum value for period.			Minimum value for period.			Mean value for period.		Mean of all percentages, 1900–1901 to 1905–6.
	Inches.	Per cent of year.	Per cent of mean value for period.	Inches.	Per cent of year.	Per cent of mean value for period.	Inches.	Per cent of year.	
September	4.74	12	124	3.10	15	81	3.83	13	13
October	3.82	9	124	2.15	10	70	3.09	10	9
November	2.78	7	129	1.35	7	63	2.15	7	7
December	1.85	5	142	.62	3	48	1.30	4	5
January	1.81	4	163	.70	4	63	1.11	4	4
February	1.30	3	151	.47	2	55	.86	3	3
March	1.88	5	152	.56	3	45	1.24	4	4
April	2.75	7	149	1.25	6	68	1.85	6	6
May	3.20	8	131	1.08	5	44	2.44	8	8
June	3.90	10	117	2.39	11	72	3.32	11	11
July	5.62	14	127	3.40	17	77	4.42	14	14
August	6.50	16	133	3.45	17	70	4.90	16	16
The year	40.15	100	132	20.52	100	67	30.51	100	100

Yearly mean for period, 30.59.

TRUCKEE RIVER AT TAHOE, CAL.

Location.—In the NW. ¼ sec. 7, T. 15 N., R. 17 E., a short distance below dam at outlet of Lake Tahoe.

Records available.—July 3, 1895, to February 29, 1896, and June 17, 1900, to December 31, 1911.

Drainage area.—519 square miles.

Gage.—Vertical staff on left bank 200 feet below dam at outlet of Lake Tahoe.

Channel.—Gravel; fairly permanent.

Discharge measurements.—Made from car and cable just above railroad bridge, about one-fourth mile below gage.

Winter flow.—Affected but little by ice.

Artificial control.—Flow regulated by operation of gates in dam at Lake Tahoe.

Accuracy.—Records are considered excellent.

Cooperation.—Gage heights furnished by United States Reclamation Service.

Discharge measurements of Truckee River at Tahoe, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
June 6[a]	J. E. Stewart	1.32	156
Sept. 27[b]	F. C. Ebert	2.04	347

[a] Made by wading about 20 feet below cable. [b] Made by wading just above railroad bridge.

Daily gage height, in feet, of Truckee River at Tahoe, Cal., for 1911.

[J. U. Haley, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.64	1.73	2.84	2.78	1.25	1.31	3.25	2.00	2.28	2.00	2.07	1.99
2	1.62	1.73	2.80	2.79	1.25	1.31	3.25	1.50	2.28	2.00	2.07	1.99
3	1.70	1.74	2.78	2.80	1.25	1.31	3.25	2.05	2.27	1.98	2.07	1.99
4	1.71	1.50	2.75	2.80	1.27	1.31	3.25	2.05	2.25	1.98	2.07	1.99
5	1.70	2.40	2.74	2.80	1.27	1.31	3.25	2.05	2.25	1.98	2.07	1.99
6	1.73	2.40	2.73	2.90	1.27	1.31	3.25	2.05	2.23	1.98	2.07	1.99
7	1.30	2.40	2.75	2.91	1.28	1.31	3.25	2.05	2.16	1.98	2.07	1.99
8	1.30	2.80	2.87	2.91	1.28	1.31	3.25	2.05	2.10	1 98	2.07	1.98
9	1.60	2.80	2.92	2.91	1.28	1.31	3.25	2.05	2.10	1.98	2.07	1.98
10	1.80	2.80	2.92	2.91	1.28	1.32	3.25	2.05	2.08	2.05	2.07	1.97
11	1.80	2.80	2.92	2.91	1.28	1.32	3.25	2.05	2.08	2.05	2.07	1.97
12	.....	2.81	2.91	2.91	1.28	1.34	3.25	2.15	2.08	2.05	2.07	1.97
13	.....	2.81	2.91	2.92	1.28	1.36	3.26	2.15	2.06	2.05	2.07	1.97
14	.....	2.81	2.90	2.92	1.28	1.37	3.26	2.15	2.04	2.05	2.06	1.96
15	2.10	2.81	2.84	2.92	1.29	1.37	3.27	2.12	2.03	2.05	2.05	1.94
16	2.10	2.82	2.84	2.92	1.29	1.69	3.27	2.10	2.03	2.05	2.05	1.93
17	2.10	2.82	2.83	2.91	1.29	2.35	3.27	2.10	2.02	2.05	2.04	1.94
18	2.11	2.82	2.83	2.91	1.29	2.74	3.27	2.25	2.02	2.05	2.04	1.95
19	2.11	2.82	2.83	2.76	1.29	2.98	3.27	2.32	2.00	2.03	2.04	1.90
20	2.12	2.84	2.83	2.62	1.29	3.00	3.28	2.35	2.00	2.03	2.04	1.90
21	2.15	2.84	2.83	2.62	1.29	3.00	3.28	2.35	2.00	2.03	2.03	1.95
22	2.15	2.84	2.83	2.62	1.30	3.00	3.28	2.35	2.00	2.02	2.02	1.90
23	2.15	2.84	2.83	2.62	1.30	3.22	3.28	2.33	2.00	2.00	2.01	1.88
24	2.15	2.84	2.83	2.62	1.30	3.22	3.27	2.32	2.00	2.00	2.01	2.26
25	1.82	2.84	2.83	2.62	1.30	3.10	3.27	2.32	2.00	2.00	2.00	2.65
26	1.82	2.84	2.83	2.62	1.30	3.18	2.30	2.30	2.00	2.07	2.00	2.65
27	1.82	2.84	2.80	1.25	1.30	3.25	2.30	2.30	2.00	2.07	2.00	2.65
28	1.84	2.84	2.79	1.25	1.30	3.25	2.30	2.30	2.00	2.07	2.00	2.65
29	1.70	.....	2.78	1.25	1.30	3.25	2.15	2.30	2.00	2.07	1.99	2.70
30	1.70	.....	2.78	1.25	1.31	3.25	2.15	2.28	2.00	2.07	1.99	2.70
31	1.70	.....	2.78	.....	1.31	.....	2.15	2.28	.....	2.07	.....	2.70

Daily discharge, in second-feet, of Truckee River at Tahoe, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	241	267	676	651	145	158	848	350	449	350	374	347
2	236	267	659	655	145	158	848	204	449	350	374	347
3	258	270	651	659	145	158	848	367	445	344	374	347
4	261	204	638	659	149	158	848	367	438	344	374	347
5	258	494	634	659	149	158	848	367	438	344	374	347
6	267	494	630	701	149	158	848	367	430	344	374	347
7	156	494	638	705	152	158	848	367	405	344	374	347
8	156	659	688	705	152	158	848	367	384	344	374	344
9	230	659	709	705	152	158	848	367	384	344	374	344
10	287	659	709	705	152	161	848	367	377	367	374	340
11	287	659	709	705	152	161	848	367	377	367	374	340
12	311	663	705	705	152	165	848	402	377	367	374	340
13	335	663	705	709	152	170	852	402	370	367	374	340
14	360	663	701	709	152	172	852	402	364	367	370	337
15	384	663	676	709	154	172	859	391	360	367	367	331
16	384	667	676	709	154	255	859	384	360	367	367	328
17	384	667	672	705	154	475	859	384	357	367	364	331
18	388	667	672	705	154	634	859	438	357	367	364	334
19	388	667	672	642	154	735	859	464	350	360	364	318
20	391	676	672	583	154	743	861	475	350	360	364	318
21	402	676	672	583	154	743	861	475	350	360	360	334
22	402	676	672	583	156	743	861	475	350	357	357	318
23	402	676	672	583	156	835	861	467	350	350	353	312
24	402	676	672	583	156	835	856	464	350	350	353	441
25	293	676	672	583	156	785	856	464	350	350	350	596
26	293	676	672	583	156	819	456	456	350	374	350	596
27	293	676	659	145	156	848	456	456	350	374	350	596
28	299	676	655	145	156	848	456	456	350	374	350	596
29	258	.....	651	145	156	848	402	456	350	374	347	617
30	258	.....	651	145	158	848	402	449	350	374	347	617
31	258	.....	651	.....	158	.....	402	449	.....	374	.....	617

NOTE.—Discharge determined from a well-defined rating curve. Discharge interpolated Jan. 12 to 14.

Monthly discharge of Truckee River at Tahoe, Cal., for 1911.

[Drainage area, 519 square miles.]

Month.	Discharge, in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total, in acre-feet.	
January	402	156	307	0.592	0.68	18,900	A.
February	676	204	590	1.14	1.19	32,800	A.
March	709	630	671	1.29	1.49	41,300	A.
April	709	145	592	1.14	1.27	35,200	A.
May	158	145	153	.295	.34	9,410	B.
June	848	158	447	.861	.96	26,600	A.
July	861	402	771	1.49	1.72	47,400	A.
August	475	204	409	.788	.91	25,100	A.
September	449	350	377	.726	.81	22,400	A.
October	374	344	359	.692	.80	22,100	A.
November	374	347	365	.703	.78	21,700	A.
December	617	312	400	.771	.89	24,600	A.
The year	861	145	452	.871	11.84	328,000	

TRUCKEE RIVER AT NEVADA-CALIFORNIA STATE LINE.

Location.—In the SE. ¼ sec. 6, T. 18 N., R. 18 E., 1 mile upstream from the State line, Calvada flag station.

Records available.—September 7, 1899, to December 31, 1911.

Drainage area.—955 square miles.

Gage.—Inclined staff on left bank with vertical section for low water. The original gage was at Farad, 2½ miles above the present location. The present gage was installed June 14, 1909.

Channel.—Gravel and small bowlders which shift at high stages.

Discharge measurements.—Made from car and cable 50 feet above gage.

Winter flow.—Affected but little by ice.

Artificial control.—Flow partly regulated by storage at Lake Tahoe and Donner Lake.

Accuracy.—Records may be considered good.

Cooperation.—Gage heights furnished by United States Reclamation Service.

Discharge measurements of Truckee River at Nevada-California State line in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Feb. 26[a]	H. D. McGlashan	2.96	831
Apr. 6	Stone & Webster Engineering Corporation	4.62	2,860
8	J. E. Stewart	4.60	2,830
May 25	Stone & Webster Engineering Corporation	5.09	3,600
June 5	do	5.76	4,620
8	J. E. Stewart	5.30	4,050
July 15	Stone & Webster Engineering Corporation	4.17	2,140
Aug. 4	do	2.84	733
Oct. 30	J. E. Stewart	2.56	470

[a] Slush ice running.

Daily gage height, in feet, of Truckee River at Nevada-California State line for 1911.

[E. C. Bigelow, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.2	3.6	3.05	4.4	5.2	5.0	4.6	3.0	2.7	2.6	2.6	2.6
2	2.2	3.4	3.0	4.6	4.8	5.2	4.5	2.9	2.7	2.6	2.6	2.6
3	2.3	3.4	3.0	4.9	5.2	5.5	4.6	2.7	2.7	2.6	2.6	2.6
4	2.3	3.3	3.0	4.9	5.6	5.7	4.6	2.85	2.7	2.6	2.6	2.6
5	2.3	3.0	3.0	4.6	6.2	5.9	4.5	2.85	2.7	2.6	2.6	2.6
6	2.2	3.0	3.0	4.7	5.3	5.9	4.5	2.85	2.7	2.6	2.65	2.6
7	2.3	3.0	3.0	4.8	5.1	5.5	4.5	2.8	2.7	2.6	2.65	2.6
8	2.3	3.0	2.9	4.7	5.5	5.5	4.5	2.8	2.65	2.6	2.65	2.6
9	2.3	3.0	3.05	4.8	5.2	5.6	4.4	2.75	2.65	2.6	2.65	2.6
10	2.3	3.0	3.05	4.5	4.8	5.5	4.3	2.8	2.7	2.6	2.7	2.6
11	2.3	3.0	3.1	4.3	5.0	5.5	4.3	2.7	2.6	2.55	2.65	2.7
12	2.4	3.0	3.1	4.3	5.3	5.5	4.1	2.7	2.6	2.55	2.65	2.65
13	2.6	3.1	3.1	4.0	5.1	5.9	4.1	2.6	2.6	2.55	2.65	2.6
14	2.7	3.1	3.15	4.1	4.9	5.5	4.1	2.8	2.6	2.55	2.6	2.5
15	2.8	3.1	3.1	4.0	4.6	5.8	4.3	2.75	2.6	2.55	2.6	2.55
16	2.8	3.1	3.1	4.1	4.8	5.5	4.2	2.7	2.6	2.55	2.65	2.6
17	2.9	3.1	3.15	4.4	4.5	5.7	4.2	2.7	2.6	2.6	2.65	2.55
18	3.0	3.1	3.15	4.6	4.3	5.7	4.1	2.7	2.6	2.6	2.65	2.5
19	3.1	3.1	3.15	5.0	4.5	5.9	4.2	2.7	2.6	2.6	2.65	2.55
20	3.0	3.1	3.3	4.6	4.6	5.9	4.1	2.7	2.6	2.6	2.65	2.5
21	3.1	3.1	3.3	4.8	4.8	5.9	4.0	2.8	2.6	2.6	2.65	2.6
22	3.0	3.0	3.4	5.0	5.2	5.5	3.8	2.8	2.6	2.55	2.65	2.5
23	2.9	3.0	3.55	5.3	5.6	5.2	3.75	2.8	2.6	2.55	2.6	2.6
24	2.9	3.0	3.65	5.8	5.8	5.0	3.75	2.75	2.6	2.55	2.65	2.6
25	2.8	3.0	3.7	6.2	5.1	4.8	3.75	2.75	2.6	2.55	2.6	2.9
26	2.8	3.0	3.7	6.4	5.0	4.6	3.65	2.75	2.6	2.55	2.6	2.9
27	2.8	3.1	3.8	6.2	5.0	5.0	3.6	2.7	2.6	2.6	2.6	2.9
28	2.6	3.1	3.85	5.3	4.9	5.2	3.2	2.7	2.6	2.6	2.65	2.9
29	2.8	.....	4.0	5.1	5.1	4.8	3.2	2.7	2.5	2.6	2.6	2.9
30	3.4	.....	4.1	5.0	5.2	4.6	3.15	2.7	2.5	2.6	2.65	2.9
31	3.6	.....	4.2	.....	5.0	.....	3.05	2.7	.....	2.6	.....	2.85

Daily discharge, in second-feet, of Truckee River at Nevada-California State line for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	385	1,480	918	2,530	3,780	3,460	2,830	873	628	498	498	498
2	385	1,260	873	2,830	3,140	3,780	2,680	786	628	498	498	498
3	418	1,260	873	3,300	3,780	4,280	2,830	628	628	498	498	498
4	418	1,160	873	3,300	4,450	4,620	2,830	744	628	498	498	498
5	418	873	873	2,830	5,470	4,960	2,680	744	628	498	498	498
6	385	873	873	2,980	3,940	4,960	2,680	744	628	498	534	498
7	418	873	873	3,140	3,620	4,280	2,680	703	628	498	534	498
8	418	873	786	2,980	4,280	4,280	2,680	703	595	498	534	498
9	418	873	918	3,140	3,780	4,450	2,530	666	595	498	534	498
10	418	873	918	2,680	3,140	4,280	2,380	703	628	498	570	498
11	418	873	964	2,380	3,460	4,280	2,380	628	562	465	534	570
12	457	873	964	2,380	3,940	4,280	2,100	628	562	465	534	534
13	562	964	964	1,970	3,620	4,960	2,100	562	562	465	534	498
14	628	964	1,010	2,100	3,300	4,280	2,100	703	562	465	498	432
15	703	964	964	1,970	2,830	4,790	2,380	666	562	465	498	465
16	703	964	964	2,100	3,140	4,280	2,230	628	498	465	534	498
17	786	964	1,010	2,530	2,680	4,620	2,230	628	498	498	534	465
18	873	964	1,010	2,830	2,380	4,620	2,100	628	498	498	534	432
19	964	964	1,010	3,460	2,680	4,960	2,230	628	498	498	534	465
20	873	964	1,160	2,830	2,830	4,960	2,100	628	498	498	534	432
21	964	964	1,160	3,140	3,140	4,960	1,970	703	498	498	534	498
22	873	873	1,260	3,460	3,780	4,280	1,710	703	498	465	534	432
23	786	873	1,420	3,940	4,450	3,780	1,650	703	498	465	498	498
24	786	873	1,540	4,790	4,790	3,460	1,650	666	498	465	534	498
25	703	873	1,590	5,470	3,620	3,140	1,650	666	498	465	498	730
26	703	873	1,590	5,830	3,460	2,830	1,540	666	498	465	498	730
27	703	964	1,710	5,470	3,460	3,460	1,480	628	498	498	498	730
28	562	964	1,780	3,940	3,300	3,780	1,060	628	498	498	534	730
29	703	.....	1,970	3,620	3,620	3,140	1,060	628	432	498	498	730
30	1,260	.....	2,100	3,460	3,780	2,830	1,010	628	432	498	534	730
31	1,480	.....	2,230	.....	3,460	.....	918	628	.....	498	.....	688

NOTE.—Discharge determined from a well-defined curve Jan. 1 to Sept. 15 and from a fairly well-defined curve Sept. 16 to Dec. 31.

Monthly discharge of Truckee River at Nevada-California State line for 1911.

[Drainage area, 955 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	1,480	385	664	0.695	0.80	40,800	B.
February	1,480	873	968	1.01	1.05	53,800	B.
March	2,230	786	1,200	1.26	1.45	73,800	B.
April	5,830	1,970	3,250	3.40	3.79	193,000	A.
May	5,470	2,380	3,580	3.75	4.32	220,000	A.
June	4,960	2,830	4,170	4.37	4.88	248,000	A.
July	2,830	918	2,080	2.18	2.51	128,000	A.
August	873	562	673	.705	.81	41,400	B.
September	628	432	545	.571	.64	32,400	B.
October	498	465	486	.509	.59	29,900	B.
November	570	498	521	.546	.61	31,000	B.
December	730	432	541	.566	.65	33,300	B.
The year	5,830	385	1,550	1.62	22.10	1,130,000	

TRUCKEE RIVER AT RENO, NEV.

Location.—At Virginia Street Bridge, in Reno, 6 miles above mouth of Steamboat Creek and 12 miles below the Nevada-California line.

Records available.—July 1, 1906, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff, fastened to retaining wall on left bank about 30 feet below the bridge. Datum 4,481.60 feet above sea level.

Channel.—Composed of gravel and bowlders and is permanent.

Discharge measurement.—Made at Rock Street Bridge about 800 feet below the gage. Low-water measurements made by wading.

Winter flow.—Affected but little by ice.

Artificial control.—Several power plants and storage above the station.

Diversions.—Water is diverted above and below the station for use in irrigation in the Truckee Valley.

Accuracy.—Results are good.

Cooperation.—Gage heights furnished by United States Weather Bureau.

Discharge measurements of Truckee River at Reno, Nev., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Feb. 26	H. D. McGlashan	2.12	821
Apr. 8	J. E. Stewart	4.26	3,260
June 8	.....do	4.75	4,230
Oct. 30	.....do	1.41	315

Daily gage height, in feet, of Truckee River at Reno, Nev., for 1911.

[N. H. Hammonds, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	2.8	2.2	3.9	4.5	4.2	3.7	1.7	1.3	1.3	1.6	1.7
2	1.4	2.7	2.2	4.2	4.1	4.4	3.7	1.6	1.3	1.3	1.6	1.6
3	1.4	2.5	2.2	4.4	4.3	4.7	3.7	1.5	1.3	1.4	1.6	1.6
4	1.4	2.3	2.3	4.4	4.8	4.8	3.7	1.5	1.3	1.4	1.6	1.7
5	1.4	2.1	2.3	4.2	4.4	5.0	3.7	1.5	1.3	1.4	1.6	1 6
6	1.5	2.4	2.2	4.3	4.5	5.0	3.7	1.4	1.4	1.4	1.7	1.6
7	1.5	2.3	2.3	4.4	4.4	4.7	3.7	1.4	1.4	1.4	1.5	1.6
8	1.4	2.3	2.3	4.3	4.5	4.7	3.6	1.4	1.4	1.4	1.6	1.6
9	1.3	2.4	2.3	4.3	4.4	4.6	3.5	1.4	1.4	1.4	1.6	1.6
10	1.5	2.4	2.4	4.0	4.0	4.6	3.4	1.4	1.4	1.4	1.7	1.6
11	1.5	2.4	2.4	3.8	4.2	4.8	3.4	1.3	1.4	1.4	1.6	1.6
12	1.5	2.4	2.4	3.6	4.4	5.0	3.3	1.3	1.3	1.4	1.6	1.6
13	1.5	2.3	2.4	3.5	4.3	4.9	3.4	1.3	1.4	1.4	1.7	1.6
14	1.5	2.3	2.4	3.4	4.1	4.9	3.4	1.3	1.4	1.5	1.7	1.6
15	1.6	2.4	2.4	3.4	3.8	4.9	3.3	1.3	1.4	1.5	1.7	1.6
16	1.8	2.3	2.4	3.5	3.9	4.7	3.3	1.3	1.4	1.5	1.7	1.6
17	1.8	2.3	2.5	3.7	3.7	4.8	3.3	1.2	1.4	1.5	1 7	1 6
18	1.8	2.3	2.5	3.9	3.4	4.9	3.3	1.4	1.4	1.5	1.7	1.6
19	1.8	2.3	2.5	4.4	3.7	5.0	3.2	1.4	1.4	1.5	1.7	1.6
20	3.2	2.3	2.6	4.1	3.7	5.1	3.2	1.4	1.3	1.5	1.7	1.5
21	1.9	2.3	2.7	4.1	4.0	4.9	3.0	1.3	1.3	1.6	1.7	1.8
22	1.8	2.3	2.8	4.4	4.4	4.7	2.8	1.3	1.3	1.6	1.7	1.8
23	1.7	2.2	3.0	4.7	4.7	4.4	2.8	1.3	1.3	1.6	1.7	1.6
24	1.8	2.3	3.1	5.0	5.0	4.1	2.7	1.3	1.3	1.6	1.7	1.6
25	2.2	2.2	3.0	5.3	4.3	3.9	2.6	1.3	1.3	1.6	1.7	1.8
26	1.8	2.2	3 0	5.6	4.1	3.8	2.5	1.3	1.3	1.6	1.7	2.0
27	1.7	2.2	3.1	5.3	4.1	4.1	2.2	1.3	1.2	1.6	1.6	2.0
28	1.7	2.2	3.2	4.6	4.2	4.3	2.0	1.4	1.2	1.6	1.6	2.0
29	1.8	.....	3.4	4.3	4.2	4.1	2.1	1.4	1.1	1.6	1.6	2.0
30	3.0	.....	3.5	4.4	4.2	3.9	2.0	1.4	1.2	1.6	1.6	2.0
31	3.2	.....	3.7	.....	4 2	.....	1.8	1.3	.....	1.6	.....	2.0

Daily discharge, in second-feet, of Truckee River at Reno, Nev., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	338	1,420	860	2,740	3,720	3,200	2,460	500	293	293	441	500
2	338	1,320	860	3,200	3,040	3,540	2,460	441	293	293	441	441
3	338	1,120	860	3,540	3,360	4,100	2,480	388	293	338	441	441
4	338	940	940	3,540	4,300	4,300	2,460	388	293	338	441	500
5	338	780	940	3,200	3,540	4,700	2,460	388	293	338	441	441
6	388	1,030	860	3,360	3,720	4,700	2,460	338	338	338	500	441
7	388	940	940	3,540	3,540	4,100	2,460	338	338	338	388	441
8	338	940	940	3,360	3,720	4,100	2,330	338	338	338	441	441
9	293	1,030	940	3,360	3,540	3,900	2,200	338	338	338	441	441
10	388	1,030	1,030	2,880	2,880	3,900	2,070	338	338	338	500	441
11	388	1,030	1,030	2,600	3,200	4,300	2,070	293	338	338	441	441
12	388	1,030	1,030	2,330	3,540	4,700	1,960	293	293	338	441	441
13	388	940	1,030	2,200	3,360	4,500	2,070	293	338	338	500	441
14	388	940	1,030	2,070	3,040	4,500	2,070	293	338	388	500	441
15	441	1,030	1,030	2,070	2,600	4,500	1,960	293	338	388	500	441
16	562	940	1,030	2,200	2,740	4,100	1,960	293	338	388	500	441
17	562	940	1,120	2,460	2,460	4,300	1,960	250	388	388	500	441
18	562	940	1,120	2,740	2,070	4,500	1,960	338	338	388	500	441
19	562	940	1,120	3,540	2,460	4,700	1,850	338	338	388	500	441
20	1,850	940	1,220	3,040	2,460	4,920	1,850	338	293	388	500	388
21	630	940	1,320	3,040	2,880	4,500	1,630	293	293	441	500	562
22	562	940	1,420	3,540	3,540	4,100	1,420	293	293	441	500	562
23	500	860	1,630	4,100	4,100	3,540	1,420	293	293	441	500	441
24	562	940	1,740	4,700	4,700	3,040	1,320	293	293	441	500	441
25	860	860	1,630	5,360	3,360	2,740	1,220	293	293	441	500	562
26	562	860	1,630	6,060	3,040	2,600	1,120	293	293	441	500	700
27	500	860	1,740	5,360	3,040	3,040	860	293	250	441	441	700
28	500	860	1,850	3,900	3,200	3,360	700	338	250	441	441	700
29	562	.....	2,070	3,360	3,200	3,040	780	338	215	441	441	700
30	1,630	.....	2,200	3,540	3,200	2,740	700	338	250	441	441	700
31	1,850	.....	2,460	.....	3,200	.....	562	293	.....	441	.....	700

NOTE.—Daily discharge determined from a curve well defined for all stages.

Monthly discharge of Truckee River at Reno, Nev., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	1,850	293	590	36,300	A.
February	1,420	780	976	54,200	A.
March	2,460	860	1,280	78.700	A.
April	6,060	2,070	3,360	200,000	A.
May	4,700	2,070	3,250	200,000	A.
June	4,920	2,600	3,940	234,000	A.
July	2,460	562	1,780	109,000	A.
August	500	250	328	20,200	A.
September	338	215	306	18,200	A.
October	441	293	383	23,600	A.
November	500	388	454	27,000	A.
December	700	388	505	31,100	A.
The year	6,060	215	1,430	1,030,000	

TRUCKEE RIVER AT CLARKS, NEV.

Location.—At highway bridge in the SE. ¼ sec. 26, T. 20 N., R. 22 E., about 600 feet from the Southern Pacific Railroad station at Clarks.

Records available.—July 1, 1907, to June 6, 1910,[1] and August 1, 1910, to December 31, 1911.

Drainage area.—1,740 square miles.

Gage.—Vertical staff on south abutment of bridge.

Channel.—Composed of rock and gravel and appears permanent.

Discharge measurements.—Made from highway bridge.

Winter flow.—As the water is swift at the gage the records are not believed to be much affected by ice.

Artificial control.—Several power plants and storage above the station.

Diversions.—Water is used for irrigation in the Truckee Valley above the station.

Accuracy.—Results are good.

Cooperation.—Gage heights and discharge measurements furnished by United States Reclamation Service.

Records at this station show the amount of water available for use by the United States Reclamation Service on the Truckee-Carson project.

Discharge measurements of Truckee River at Clarks, Nev., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 5	D. S. Stuver	2.82	490
26	Stone & Webster Engineering Corporation	3.80	894
31	D. S. Stuver.	6.17	3,080
Feb. 7	.....do	4.01	1,140
Apr. 5	Stone & Webster Engineering Corporation	6.72	3,450
June 5	.....do	7.67	4,640
July 14	.....do	5.68	2,440

[1] At Derby dam, where the discharge is practically the same as at Clarks.

Daily gage height, in feet, of Truckee River at Clarks, Nev., for 1911.

[E. R. Dack, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.9	5.9	3.9	6.3	7.0	6.7	6.5	3.7	2.7	2.6	3.1	3.1
2	2.8	5.2	3.9	6.6	6.8	6.8	6.4	3.7	2.7	2.6	3.3	3.1
3	2.8	4.6	4.0	7.0	6.7	7.0	6.4	2.9	2.8	2.8	3.2	3.1
4	2.8	4.3	4.2	7.0	7.2	7.5	6.4	3.1	2.7	3.0	3.1	3.1
5	2.9	4.1	4.2	6.8	7.7	7.4	6.2	2.9	2.7	2.9	3.0	3.1
6	2.8	4.1	4.1	6.7	7.7	7.4	6.2	2.9	2.6	2.8	3.0	3.1
7	2.9	4.0	4.1	6.8	7.2	7.4	6.0	2.7	2.8	2.7	3.1	3.0
8	2.9	4.0	4.8	6.8	7.1	7.5	6.0	2.7	2.7	2.7	3.1	3.0
9	2.9	4.0	4.6	6.7	7.0	7.5	5.9	2.7	2.6	2.7	3.2	3.1
10	2.9	4.1	4.5	6.2	6.7	7.4	5.9	2.5	2.7	2.6	3.3	3.1
11	2.8	4.2	4.4	6.3	6.6	7.4	5.8	2.3	2.7	2.7	3.4	3.1
12	2.6	4.1	4.4	6.0	6.8	7.5	5.6	2.5	2.9	2.8	3.3	3.1
13	2.7	4.1	4.3	5.7	6.8	7.5	5.4	2.5	2.8	2.9	3.2	3.1
14	3.2	4.1	4.2	5.5	6.7	7.6	5.3	2.5	2.7	3.0	3.2	3.1
15	3.1	4.1	4.2	5.4	6.5	7.6	5.2	2.5	2.6	3.1	3.2	3.1
16	3.1	4.0	4.3	5.8	6.3	7.6	5.8	2.7	2.6	3.0	3.4	3.1
17	3.1	3.9	4.5	5.8	6.0	7.5	5.6	2.7	2.7	2.9	3.3	3.1
18	3.1	3.9	4.4	6.1	5.5	7.5	5.4	2.3	2.6	3.0	3.2	3.1
19	3.1	3.9	4.4	6.8	5.9	7.6	5.2	2.4	2.7	3.0	3.2	3.0
20	3.1	3.9	4.5	6.9	5.9	7.6	5.1	2.6	2.6	3.0	3.2	3.0
21	4.1	3.9	4.9	6.8	6.1	7.4	5.0	2.7	2.6	3.1	3.2	3.0
22	4.7	3.9	5.1	6.9	6.4	7.5	4.8	2.7	2.6	3.1	3.1	2.9
23	4.2	3.9	5.2	7.1	6.7	6.7	4.6	2.6	2.6	3.0	3.1	2.9
24	4.6	3.9	5.3	7.5	7.2	6.6	4.6	2.6	2.7	3.0	3.1	3.0
25	4.1	3.9	5.3	7.8	7.1	6.5	4.6	2.5	2.8	3.0	3.1	3.1
26	4.2	3.8	5.2	8.0	6.6	6.4	4.4	2.6	2.7	3.1	3.1	3.3
27	3.9	3.8	5.3	8.2	6.6	6.3	4.3	2.6	2.6	3.2	3.1	3.5
28	3.7	3.9	5.3	8.0	6.6	6.5	4.2	2.7	2.6	3.2	3.1	3.7
29	3.9	.....	5.6	7.3	6.6	6.5	4.1	2.6	2.7	3.2	3.1	3.7
30	4.2	.....	5.7	7.1	6.7	6.4	3.9	2.7	2.6	3.1	3.1	3.7
31	6.0	.....	6.0	.....	6.7	.....	3.9	2.7	.....	3.1	.....	3.7

Daily discharge, in second-feet, of Truckee River at Clarks, Nev., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	500	2,660	1,020	3,060	3,840	3,490	3,260	900	420	380	580	580
2	460	2,000	1,020	3,370	3,600	3,600	3,160	900	420	380	680	580
3	460	1,510	1,080	3,840	3,490	3,840	3,160	500	460	460	630	580
4	460	1,280	1,210	3,840	4,080	4,440	3,160	580	420	540	580	580
5	500	1,140	1,210	3,600	4,680	4,320	2,960	500	420	500	540	580
6	460	1,140	1,140	3,490	4,680	4,320	2,960	500	380	460	540	580
7	500	1,080	1,140	3,600	4,080	4,320	2,760	420	460	420	580	540
8	500	1,080	1,670	3,600	3,960	4,440	2,760	420	420	420	580	540
9	500	1,080	1,510	3,490	3,840	4,440	2,660	420	380	420	630	580
10	500	1,140	1,430	2,960	3,490	4,320	2,660	350	420	380	680	580
11	460	1,210	1,350	3,060	3,370	4,320	2,560	290	420	420	730	580
12	380	1,140	1,350	2,760	3,600	4,440	2,360	350	500	460	680	580
13	420	1,140	1,280	2,460	3,600	4,440	2,180	350	460	500	630	580
14	630	1,140	1,210	2,270	3,490	4,560	2,090	350	420	540	630	580
15	580	1,140	1,210	2,180	3,260	4,560	2,000	350	380	580	630	580
16	580	1,080	1,280	2,560	3,060	4,560	2,560	420	380	540	730	580
17	580	1,020	1,430	2,560	2,760	4,440	2,360	420	420	500	680	580
18	580	1,020	1,350	2,860	2,270	4,440	2,180	290	380	540	630	580
19	580	1,020	1,350	3,600	2,660	4,560	2,000	320	420	540	630	540
20	580	1,020	1,430	3,720	2,660	4,560	1,910	380	380	540	630	540
21	1,140	1,020	1,750	3,600	2,860	4,320	1,830	420	380	580	630	540
22	1,590	1,020	1,910	3,720	3,160	4,440	1,670	420	380	580	580	500
23	1,210	1,020	2,000	3,960	3,490	3,490	1,510	380	380	540	580	500
24	1,510	1,020	2,090	4,440	4,080	3,370	1,510	380	420	540	580	540
25	1,140	1,020	2,090	4,800	3,960	3,260	1,510	350	460	540	580	580
26	1,210	960	2,000	5,050	3,370	3,160	1,350	380	420	580	580	680
27	1,020	960	2,090	5,310	3,370	3,060	1,380	380	380	630	580	780
28	900	1,020	2,090	5,050	3,370	3,260	1,210	420	380	630	580	900
29	1,020	.....	2,360	4,200	3,370	3,260	1,140	380	420	630	580	900
30	1,210	.....	2,460	3,960	3,490	3,160	1,020	420	380	580	580	900
31	2,760	.....	2,760	.....	3,490	.....	1,020	420	.....	580	.....	900

NOTE.—Daily discharge determined from a curve well defined for all stages.

Monthly discharge of Truckee River at Clarks, Nev., for 1911.

[Drainage area 1,740 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	2,760	380	804	0.462	0.53	49,400	A.
February	2,660	960	1,180	.678	.71	65,500	A.
March	2,760	1,020	1,590	.914	1.05	97,800	A.
April	5,210	2,180	3,570	2.05	2.29	212,000	A.
May	4,680	2,270	3,500	2.01	2.32	215,000	A.
June	4,560	3,060	4,040	2.32	2.59	240,000	A.
July	3,260	1,020	2,150	1.24	1.43	132,000	A.
August	900	290	431	.248	.29	26,500	B.
September	500	380	412	.237	.26	24,500	B.
October	630	380	514	.295	.34	31,600	A.
November	730	540	616	.354	.40	36,700	A.
December	900	500	618	.355	.41	38,000	A.
The year	5,210	290	1,620	.931	12.62	1,170,000	

DONNER CREEK NEAR TRUCKEE, CAL.

Location.—150 feet below the dam of the Donner Creek Ice Co., in NE. ¼ sec. 17, T. 17 N., R. 16 E., 1½ miles west of Truckee and below the mouth of Cold Creek, the principal tributary.

Records available.—October 23, 1902, to December 31, 1911.

Drainage area.—30 square miles.

Gage.—Inclined staff on the left bank 150 feet below the dam. Beginning with June 1, 1909, all gage heights are referred to the datum of the present gage. Before this date several gages were used.

Channel.—Gravel; shifts at high stages.

Discharge measurements.—Made from car and cable at the gage or by wading.

Winter flow.—Gage heights affected at times by ice.

Artificial control.—Flow is controlled by the operation of the outlet gates at the dam.

Accuracy.—Record considered fairly good.

Cooperation.—Gage heights furnished by United States Reclamation Service.

Discharge measurements of Donner Creek near Truckee, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 15[a]	J. E. Stewart	1.13	133
June 2	Stone & Webster Engineering Corporation	2.15	448
5[a]	J. E. Stewart	2.39	556
Aug. 5[a]	G. T. Peekema	.08	24
10	Stone & Webster Engineering Corporation	— .02	16
Sept. 26[b]	F. C. Ebert	— .25	4.6

[a] Wading 1,500 feet below dam. [b] Wading 15 feet below cable.

Daily gage height, in feet, of Donner Creek near Truckee, Cal., for 1911.

[W. O. Blinn, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.4	1.6	0.6	1.35	1.8	2.1	1.45	0.15	−0.2	−0.25	−0.2	0.0
2	.4	1.5	.5	1.45	1.8	2.2	1.45	.1	— .2	— .25	— .2	— .1
3	.4	1.4	.5	1.45	1.9	2.35	1.5	.1	— .2	— .25	— .2	.0
4	.3	1.3	.5	1.45	2.0	2.45	1.45	.1	— .2	— .25	— .2	— .1
5	.3	1.3	.5	1.5	1.95	2.5	1.4	.1	— .2	— .25	— .2	— .1
6	.3	1.3	.5	1.5	1.8	2.45	1.35	.1	— .2	— .25	— .2	— .1
7	.4	1.2	.5	1.5	1.9	2.45	1.3	.1	— .2	— .25	— .2	— .1
8	.4	1.2	.5	1.5	1.9	2.45	1.25	0	— .2	— .25	— .4	— .1
9	.4	1.0	.5	1.5	1.9	2.4	1.2	.0	— .2	— .25	— .3	— .1
10	.5	1.0	.55	1.4	1.8	2.45	1.1	.0	— .2	— .25	— .2	.0
11	.6	.9	.6	1.3	1.85	2.45	1.1	.0	— .2	— .25	— .2	.0
12	.6	.9	.6	1.3	1.9	2.5	1.0	.0	— .2	— .25	— .2	.0
13	.6	.9	.55	1.2	1.9	2.5	1.0	.0	— .2	— .2	— .2	.0
14	.6	1.0	.55	1.15	1.9	2.4	1.0	.0	— .2	— .2	— .2	.0
15	.6	1.0	.6	1.1	1.8	2.4	1.0	.0	— .2	— .2	— .2	.0
16	.6	1.0	.6	1.1	1.8	2.35	.95	— .1	— .2	— .2	— .2	.0
17	.7	1.0	.6	1.15	1.8	2.4	.9	— .1	— .08	— .2	— .2	.0
18	.7	1.1	.6	1.25	1.8	2.4	.85	— .1	— .04	— .2	— .1	— .1
19	.7	1.1	.6	1.3	1.7	2.3	.8	— .1	— .07	— .2	— .1	— .2
20	.7	1.1	.6	1.2	1.75	2.25	.75	— .1	— .2	— .2	.0	— .2
21	.7	1.0	.6	1.3	1.8	2.2	.7	— .1	— .2	— .2	.0	— .3
22	.7	.95	.7	1.45	2.0	2.0	.65	— .15	— .2	— .2	.0	— .2
23	.7	.8	.7	1.65	2.25	1.85	.6	— .15	— .2	— .2	.0	— .2
24	.8	.7	.7	1.75	2.25	1.75	.55	— .15	— .2	— .2	.0	— .2
25	.8	.6	.85	1.85	2.1	1.65	.5	— .2	— .25	— .2	.0	— .3
26	.8	.6	.9	2.0	2.0	1.7	.45	— .2	— .25	— .2	.0	— .2
27	.9	.6	.9	1.9	2.0	1.8	.4	— .2	— .25	— .2	.0	— .2
28	.9	.55	1.05	1.8	2.05	1.7	.3	— .2	— .25	— .2	.0	— .2
29	1.6	.....	1.1	1.75	2.1	1.65	.2	— .2	— .25	— .2	.0	— .2
30	1.6	.....	1.1	1.8	2.1	1.55	.2	— .2	— .25	— .2	.0	— .3
31	1.6	.....	1.2	.....	2.1	.....	.2	— .2	.....	— .2	.....	— .2

NOTE.—Gage heights Sept. 17, 18, and 19 determined from hydrograph; creek was regulated by drawing and filling the pond on these dates. Relation of gage heights to discharge probably not affected by ice during winter.

Daily discharge, in second-feet, of Donner Creek near Truckee, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	18	242	38	174	306	422	232	30	7	5	7	18
2	18	212	27	200	306	466	232	26	7	5	7	12
3	18	187	27	200	342	538	245	26	7	5	7	18
4	11	162	27	200	380	587	232	26	7	5	7	12
5	11	162	27	212	361	612	220	26	7	5	7	12
6	11	162	27	212	306	587	208	26	7	5	7	12
7	18	140	27	212	342	587	197	26	7	5	7	12
8	18	140	27	212	342	587	186	18	7	5	1	12
9	18	100	27	212	342	562	175	18	7	5	3	12
10	27	100	32	187	306	587	155	18	7	5	7	18
11	38	82	38	162	324	587	155	18	7	5	7	18
12	38	82	38	162	342	612	136	18	7	5	7	18
13	38	82	32	140	342	612	136	18	7	7	7	18
14	38	100	32	130	342	562	136	18	7	7	7	18
15	38	100	38	120	306	562	136	18	7	7	7	18
16	38	100	38	120	306	538	128	12	7	7	7	18
17	51	100	38	130	306	562	120	12	13	7	7	18
18	51	120	38	151	306	562	112	12	16	7	12	12
19	51	120	38	162	272	515	104	12	14	7	12	7
20	51	120	38	140	289	494	97	12	7	7	18	7
21	51	100	38	162	306	472	90	12	7	7	18	3
22	51	91	51	200	380	395	83	10	7	7	18	7
23	51	66	51	257	490	345	76	10	7	7	18	7
24	66	51	51	289	490	315	70	10	7	7	18	7
25	66	38	74	324	422	285	64	7	5	7	18	3
26	66	38	82	380	380	300	58	7	5	7	18	7
27	82	38	82	342	380	330	53	7	5	7	18	7
28	82	32	110	306	401	300	43	7	5	7	18	7
29	242	.....	120	289	422	285	34	7	5	7	18	7
30	242	.....	120	306	422	258	34	7	5	7	18	3
31	242	.....	140	.....	422	.....	34	7	.....	7	.....	7

NOTE.—Daily discharge determined from two fairly well defined curves, the first applicable from Jan. 1 to June 13, the other from June 14 to Dec. 31, 1911.

Monthly discharge of Donner Creek near Truckee, Cal., for 1911.

[Drainage area, 30 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	242	11	59.4	1.98	2.28	3,650	C.
February	242	32	110	3.67	3.82	6,110	B.
March	140	27	50.7	1.69	1.95	3,120	B.
April	380	120	210	7.00	7.81	12,500	B.
May	490	272	354	11.8	13.60	21,800	A.
June	612	258	481	16.0	17.85	28,600	A.
July	245	34	128	4.27	4.91	7,870	B.
August	30	7	15.5	.517	.60	953	C.
September	16	5	7.3	.243	.27	434	C.
October	7	5	6.2	.207	.24	381	C.
November	18	1	11.0	.367	.41	655	C.
December	18	3	11.5	.383	.44	707	C.
The year	612	1	120	4.00	54.18	86,800	

PROSSER CREEK NEAR TRUCKEE,[1] CAL.

Location.—At highway bridge in the SW. ¼ sec. 30, T. 18 N., R. 17 E., just below the mouth of Alder Creek, 2 miles above the mouth of Prosser Creek, 4 miles north of Truckee, and 3 miles below Hobart Mills, Cal.

Records available.—June 27, 1903, to October 15, 1904, and September 23, 1907, to December 31, 1911.

Drainage area.—48 square miles.

Gage.—Several gages with independent datums have been in use at this station. The 1911 gage heights, except those for March 1 to May 13, are referred to the datum of the gage painted on the left pier of the bridge January 15, 1909. From March 1 to May 13 gage heights were read only on a gage installed by the Stone & Webster Engineering Corporation; exact location of gage not known.

Channel.—Gravel; subject to change during floods.

Discharge measurements.—Made from car and cable 150 feet below gage, from the bridge, or by wading.

Winter flow.—Affected by ice.

Accuracy.—Record is considered fair.

Cooperation.—Gage heights furnished by the United States Reclamation Service and the Stone & Webster Engineering Corporation.

Discharge measurements of Prosser Creek near Truckee, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 15[a]	J. E. Stewart	3.32	163
May 31	Stone & Webster Engineering Corporation	4.35	454
June 5[b]	J. E. Stewart	4.78	608
July 18	Stone & Webster Engineering Corporation	3.55	194
Aug. 5[b]	G. T. Peekema	2.76	57
9	Stone & Webster Engineering Corporation	2.67	56
Sept. 26[b]	F. C. Ebert	2.27	19

[a] Made from downstream side of bridge. [b] Wading measurements.

[1] Published in former reports as "near Hobart Mills."

Daily gage height, in feet, of Prosser Creek near Truckee, Cal., for 1911.

[F. Lopez, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.4	.....	1.2	.....	1.9	4.4	3.95	2.9	2.35	2.22	2.4	1.7
2	2.4	.....	1.2	.....	1.9	4.6	3.85	2.9	2.35	2.22	2.4	1.7
3	2.4	.....	1.2	.....	1.9	4.7	3.85	2.78	2.32	2.22	2.4	1.6
4	2.4	.....	1.3	.....	2.2	4.8	3.85	2.8	2.3	2.3	2.4	1.7
5	2.4	.....	1.3	.....	2.3	4.9	3.75	2.8	2.3	2.3	2.4	1.7
6	2.4	.....	1.3	.....	2.2	4.85	3.7	2.8	2.3	2.3	2.4	1.7
7	2.4	.....	1.3	.....	2.1	4.7	3.75	2.8	2.3	2.3	2.4	1.7
8	2.4	.....	1.3	.....	2.2	4.65	3.7	2.8	2.3	.....	2.4	1.7
9	2.4	.....	1.1	.....	2.1	4.6	3.7	2.65	2.3	.....	2.4	1.6
10	2.5	.....	1.1	.....	2.1	4.6	3.6	2.58	2.3	.....	2.5	1.8
11	2.6	.....	1.1	.....	2.1	4.7	3.6	2.6	2.3	.....	2.5	1.8
12	2.6	.....	1.15	.....	2.1	4.8	3.6	2.6	2.3	.....	2.2	1.7
13	2.6	.....	1.2	.....	1.9	4.7	3.65	2.6	2.3	.....	2.3	1.8
14	2.6	.....	1.2	.....	4.6	4.6	3.55	2.6	2.3	.....	2.6	1.7
15	3.1	.....	1.2	3.32	4.6	4.7	3.5	2.6	2.25	.....	2.3	1.8
16	3.1	.....	1.3	1.8	4.6	4.7	3.6	2.6	2.25	.....	2.4	1.8
17	3.2	.....	1.3	1.8	4.6	4.65	3.6	2.6	2.25	.....	2.2	1.6
18	3.2	.....	1.4	1.9	4.5	4.6	3.45	2.6	2.20	.....	2.4	1.6
19	3.3	.....	1.2	1.9	4.5	4.65	3.48	2.5	2.20	.....	2.2	1.6
20	3.4	.....	1.0	1.8	4.4	4.75	3.48	2.5	2.25	.....	2.5	1.6
21	3.4	.....	1.1	1.8	4.4	4.6	3.25	2.5	2.25	.....	2.3	1.6
22	3.4	.....	1.1	1.9	4.6	4.4	3.18	2.5	2.25	.....	2.4	1.6
23	3.4	.....	1.3	1.9	4.85	4.2	3.15	2.5	2.25	.....	2.4	1.6
24	3.5	.....	1.2	2.1	4.8	4.1	3.15	2.48	2.25	.....	2.4	1.6
25	3.4	.....	1.1	2.2	4.6	3.9	3.15	2.42	2.25	.....	2.4	1.6
26	3.6	.....	1.2	2.3	4.5	4.1	3.10	2.45	2.25	.....	2.4	1.6
27	3.7	.....	1.4	2.2	4.5	4.25	3.02	2.40	2.25	.....	2.4	1.6
28	3.8	.....	1.3	1.9	4.5	4.2	3.0	2.4	2.25	.....	2.3	1.6
29	.....	.....	1.3	1.9	4.6	4.1	2.9	2.4	2.25	.....	2.2	1.6
30	.....	.....	1.3	1.9	4.6	3.85	2.9	2.4	2.25	.....	2.1	1.6
31	.....	.....	1.3	.....	4.6	.....	2.85	2.35	.....	.....	.....	1.6

NOTE.—Two gages at different locations were read during 1911. Readings Jan. 1 to 28, Apr. 15, and after May 13, refer to United States Reclamation Service gage. No record for missing periods at either gage. Stone & Webster gage read Mar. 1 to 31 and Apr. 16 to May 13. Gage heights Dec. 1 to 31 are considered unreliable. Relation of gage heights to discharge probably not greatly affected by ice during the winter months.

Daily discharge, in second-feet, of Prosser Creek near Truckee, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	28	320	85	153	318	463	302	79	24	16	28	*20
2	28	250	85	221	318	544	272	79	24	16	28	14
3	28	180	85	*290	318	586	272	65	22	16	28	*7
4	28	*110	107	265	492	630	272	67	21	21	28	*21
5	28	110	107	*240	562	675	244	67	21	21	28	*14
6	28	*110	107	250	492	652	230	67	21	21	28	*15
7	28	*120	107	*260	428	586	244	67	21	21	28	13
8	28	100	107	260	492	565	230	67	21	21	28	*11
9	28	*80	65	260	428	544	230	50	21	21	28	12
10	36	90	65	*260	428	544	205	43	21	21	36	*13
11	45	*70	65	237	428	586	205	45	21	21	36	13
12	45	80	75	214	428	630	205	45	21	*21	15	*13
13	45	*90	85	190	318	586	218	45	21	22	21	12
14	45	80	85	167	544	544	194	45	21	*22	45	10
15	107	*70	85	144	544	586	182	45	18	22	21	8
16	107	75	107	270	544	586	205	45	18	*21	28	*6
17	123	*80	107	270	544	565	205	45	18	*21	15	6
18	123	80	132	318	503	544	171	45	15	22	28	6
19	140	80	85	318	503	565	178	36	15	24	15	*6
20	160	80	47	270	463	608	178	36	18	*26	36	8

Daily discharge, in second-feet, of Prosser Creek near Truckee, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
21	160	*80	65	270	463	544	132	36	18	24	21	10
22	160	*90	65	318	544	463	120	36	18	*22	28	*12
23	160	*85	107	318	652	388	115	36	18	24	28	10
24	182	85	85	428	630	352	115	34	18	*25	28	8
25	160	85	65	492	544	286	115	30	18	*23	28	7
26	205	85	85	562	503	352	107	32	18	23	28	6
27	230	85	132	492	503	406	95	28	18	*23	28	*5
28	258	85	107	318	503	388	92	28	18	24	21	7
29	289	.....	107	318	544	352	79	28	18	*25	15	*9
30	*320	.....	107	318	544	272	79	28	18	26	10	*7
31	320	.....	107	.....	544	.....	73	24	.....	27	.....	*8

NOTE.—Daily discharge determined from two fairly well-defined curves, the first applicable to United States Reclamation Service gage heights, the second applicable to Stone & Webster gage heights. Discharge marked * estimated from records of flow and hydrograph of Little Truckee River at Boca. Discharge interpolated for other days on which gage was not read. No use made of December gage heights in determining discharge for that month. Owing to the uncertainty of many of these data too great accuracy should not be accredited to the yearly run-off.

Monthly discharge of Prosser Creek near Truckee, Cal., for 1911.

[Drainage area, 48 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	320	28	118	2.46	2.84	7,260	C.
February	320	70	105	2.19	2.28	5,830	D.
March	132	47	91.1	1.90	2.19	5,600	C.
April	562	144	290	6.04	6.74	17,300	C.
May	652	318	486	10.1	11.64	29,900	A.
June	675	272	513	10.7	11.94	30,500	A.
July	302	73	179	3.73	4.30	11,000	B.
August	79	24	45.9	.956	1.10	2,820	B.
September	24	18	19.4	.404	.45	1,150	C.
October	27	16	22.0	.458	.53	1,350	D.
November	45	10	26.1	.543	.61	1,550	C.
December	21	5	10.2	.212	.24	627	D.
The year	675	5	159	3.31	44.86	115,000	

LITTLE TRUCKEE RIVER AT BOCA, CAL.

Location.—Five hundred feet below ice-pond dam and 150 feet above mouth of stream.

Records available.—January 1 to December 31, 1911. At Pine Station and Starr, 1903 to 1910. The station on this river was originally located about 3 miles north of Boca at Pine Station. It was moved to Starr, about 5 miles north of Boca, January 1, 1908, and discontinued at that point October 23, 1910.

Drainage area.—Not measured.

Gage.—Inclined staff on left bank 100 feet above railroad bridge.

Channel.—Gravel and appears permanent.

Discharge measurements.—Made from car and cable at gage.

Winter flow.—Affected by ice.

Artificial control.—Flow regulated by dam. Water passing through small power plant, which is operated only during the night, does not pass gage.

Accuracy.—On account of the regulation at the dam and the operation of the power plant, the record is not very satisfactory. The rating curve is well defined.

Cooperation.—Gage heights furnished by United States Reclamation Service.

Discharge measurements of Little Truckee River at Boca, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 14[a]	J. E. Stewart	2.49	608
May 9	Stone & Webster Engineering Corporation	3.70	1,320
June 7	J. E. Stewart	3.87	1,500
July 18	Stone & Webster Engineering Corporation	2.30	444
Aug. 5[b]	G. T. Peekema	1.30	86
12	Stone & Webster Engineering Corporation	1.13	60
Sept. 26[c]	F. C. Ebert	.89	35

[a] About 2 second-feet diverted through power canal above gage.
[b] Measurement made by wading at cable. About 3.5 second-feet in the power canal.
[c] Wading measurement. No water being diverted.

Daily gage height, in feet, of Little Truckee River at Boca, Cal., for 1911.

[Robert A. Tonini, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.05	1.8	1.25	2.7	3.7	3.35	2.75	1.6	0.85	.....	0.85	1.05
2	1.05	1.9	1.25	2.95	3.8	3.4	2.65	1.5	.8	.....	.8	.9
3	1.0	1.75	1.3	3.2	4.1	3.6	2.65	1.5	.8	.....	.75	.75
4	1.0	1.5	1.6	3.15	4.7	3.7	2.6	1.4	.8	.....	.75	1.1
5	1.05	1.5	1.3	3.05	4.5	3.8	2.6	1.35	.75	.....	.8	.9
6	1.05	1.45	1.3	3.1	4.0	3.9	2.6	1.3	.85	.8	.75	.95
7	1.1	1.55	1.55	3.1	3.8	3.7	2.6	1.3	.85	.75	.8	.9
8	1.1	1.4	1.4	3.1	4.0	3.7	2.55	1.25	.8	.75	.8	.75
9	.9	1.4	1.2	3.05	3.7	3.6	2.45	1.2	.85	.75	.85	.8
10	.75	1.45	1.4	2.8	3.55	3.65	2.4	1.15	.85	.....	1.0	.8
11	.5	1.3	1.4	2.65	3.7	3.8	2.4	1.15	.8	.75	.75	.85
12	.8	1.4	1.45	2.6	3.7	3.95	2.35	1.15	.....	.75	.85	.75
13	.5	1.45	1.45	2.6	3.65	3.8	2.35	1.15	.95	.8	.9	.7
14	.4	1.35	1.4	2.55	3.4	3.8	2.4	1.1	.9	.8	.9	.75
15	.45	1.35	1.4	2.6	3.2	3.75	2.3	1.1	.85	.75	.95	.65
16	1.4	1.3	1.35	2.75	3.2	3.7	2.35	1.05	.85	.75	.95	.6
17	1.4	1.2	1.4	2.9	3.05	3.65	2.35	1.05	.85	.75	.9	.6
18	1.4	1.25	1.4	3.3	3.05	3.65	2.3	1.55	.85	.8	.8	.55
19	1.25	1.2	1.5	3.3	3.05	3.7	2.2	1.0	.85	.8	.85	.5
20	1.3	1.2	1.6	3.2	3.2	3.7	2.2	1.0	.85	.9	.85	.55
21	1.05	1.15	1.65	3.4	3.3	3.65	1.95	.95	.9	.85	.85	.55
22	1.1	1.25	1.7	3.7	3.45	3.5	1.8	.95	.85	.75	.8	.6
23	1.1	1.2	1.85	4.0	3.7	3.2	1.8	.9	.9	.8	.85	.8
24	1.2	1.2	1.9	4.3	3.8	3.05	1.8	.95	.85	.85	.9	.7
25	1.15	1.15	2.0	4.7	3.4	2.85	1.75	.95	.85	.8	.9	.55
26	1.15	1.15	2.1	4.9	3.25	2.7	1.7	.9	.....	.8	1.0	.55
27	1.15	1.2	2.1	4.35	3.25	3.0	1.65	.9	.....	.8	.95	.4
28	1.1	1.2	2.15	4.1	3.3	3.1	1.9	.9	.....	.85	.8	.65
29	1.2	.....	2.2	4.1	3.3	2.9	1.7	.9	.....	.8	.85	.7
30	1.5	.....	2.35	4.0	3.3	2.9	1.6	.9	.....	.85	.85	.6
31	1.75	.....	2.5	.....	3.3	.....	1.6	.85	.....	.85	.....	.65

NOTE.—Sept. 12, pond emptied to be cleaned; Sept. 26 to Oct. 5 and Oct. 10, gates shut down for filling of pond. Relation of gage heights to discharge probably not affected by ice during the winter months.

Daily discharge, in second-feet, of Little Truckee River at Boca, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	50	235	78	695	1,350	1,110	725	162	32	0	32	50
2	50	275	78	848	1,420	1,140	665	131	28	0	28	36
3	45	216	86	1,010	1,630	1,280	665	131	28	0	24	24
4	45	131	162	978	2,100	1,350	635	107	28	0	24	56
5	50	131	86	912	1,940	1,420	635	96	24	0	28	36
6	50	119	86	945	1,560	1,490	635	86	32	28	24	40
7	56	146	146	945	1,420	1,350	635	86	32	24	28	36
8	56	107	107	945	1,560	1,350	608	78	28	24	28	24
9	36	107	70	912	1,350	1,280	552	70	32	24	32	28
10	24	119	107	755	1,240	1,320	525	63	32	0	45	28
11	10	86	107	665	1,350	1,420	525	63	28	24	24	32
12	28	107	119	635	1,350	1,520	498	63	100	24	32	24
13	10	119	119	635	1,320	1,420	498	63	40	28	36	21
14	6	96	107	608	1,140	1,420	525	56	36	28	36	24
15	8	96	107	635	1,010	1,380	470	56	32	24	40	18
16	107	86	96	725	1,010	1,350	498	50	32	24	40	15
17	107	70	107	815	912	1,320	498	50	32	24	36	15
18	107	78	107	1,080	912	1,320	470	146	32	28	28	12
19	78	70	131	1,080	912	1,350	415	45	32	28	32	10
20	86	70	162	1,010	1,010	1,350	415	45	32	36	32	12
21	50	63	180	1,140	1,080	1,320	298	40	36	32	32	12
22	56	78	197	1,350	1,180	1,210	235	40	32	24	28	15
23	56	70	255	1,560	1,350	1,010	235	36	36	28	32	28
24	70	70	275	1,780	1,420	912	235	40	32	32	36	21
25	63	63	320	2,100	1,140	785	216	40	32	28	36	12
26	63	63	365	2,260	1,040	695	197	36	0	28	45	12
27	63	70	365	1,820	1,040	880	180	36	0	28	40	6
28	56	70	390	1,630	1,080	945	275	36	0	32	28	18
29	70	.....	415	1,630	1,080	815	197	36	0	28	32	21
30	131	.....	498	1,560	1,080	815	162	36	0	32	32	15
31	216	.....	580	.....	1,080	.....	162	32	.....	32	.....	18

NOTE.—Discharge Sept. 12 estimated as 100 second-feet, as sudden opening of pond gates would increase discharge over previous flow. Estimated zero flow Sept. 26 to Oct. 5 and Oct 10.

Monthly discharge of Little Truckee River at Boca, Cal., for 1911.

[Drainage area, 186 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	216	6	61.4	0.331	0.38	3,780	B.
February	275	63	108	.581	.60	6,000	B.
March	580	70	194	1.04	1.20	11,900	A.
April	2,260	608	1,120	6.02	6.72	66,600	A.
May	2,100	912	1,260	6.77	7.80	77,500	A.
June	1,520	695	1,210	6.51	7.26	72,000	A.
July	725	162	435	2.34	2.70	26,700	B.
August	162	32	66.3	.356	.41	4,080	B.
September	100	0	28.7	.154	.17	1,710	B.
October	36	0	22.3	.120	.14	1,370	B.
November	45	24	32.3	.174	.19	1,920	B.
December	56	6	23.2	.125	.14	1,430	B.
The year	2,260	.0	380	2.04	27.71	275,000	

WARNER LAKE BASIN.

CRUMP LAKE NEAR ADEL, OREG.

Location.—On the west shore of the lake 8 miles north of Adel in sec. 27, T. 38 S., R. 24 E., unsurveyed.

Records available.—May 21, 1910, to December 31, 1911.

Gage.—Vertical staff fastened to a large bowlder 50 feet east of the county road.

The following gage readings were obtained during 1910:

	Feet.		Feet.
May 21	3.5	Nov. 14	0.05
June 2	3.05	24	.1
13	2.65	Dec. 4	.25
23	2.3	14	.9
July 8	1.8	24	1.3
21	1.55		

Daily gage height, in feet, of Crump Lake near Plush, Oreg., for 1911.

[Ed. Keissling, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1										1.15		1.4
2							3.6					
3									1.5			
4	1.3	1.6	1.8	3.0		3.6						
5												
6								2.2				
7					3.65							
8										1.15		
9							3.25					
10									1.4			
11						3.75						
12												
13								2.0				
14	1.3	1.7	2.0	3.15	3.7							
15										1.1	1.2	1.5
16							3.0					
17									1.3			
18						3.7						
19												
20								1.85				
21					3.7							
22										1.1		
23							2.7					
24	1.5	1.75	2.1	3.5					1.2			
25						3.65						
26												
27								1.7				
28					3.7							
29										1.05		
30				3.6			2.45					
31												

HART LAKE NEAR PLUSH, OREG.

Location.—On line between secs. 22 and 27, T. 36 S., R. 24 E., 2 miles northeast of Plush and just north of the mouth of Honey Creek.

Records available.—June 8, 1910, to December 31, 1911. Fragmentary.

Gage.—Vertical staff nailed to a post.

The following gage readings were made during 1910: June 8, 3.42 feet; June 28, 3.23 feet; July 24, 2.84 feet.

Daily gage height, in feet, of Hart Lake near Adel, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1								2.60	2.40	2.40
2		3.00								
3							2.90			
4										
5	2.10									
6						3.50				
7										
8								2.55		
9		3.10								
10							2.85			
11										
12	2.10									
13						3.35				
14										
15								2.50	2.45	2.45
16		3.40								
17					3.80		2.75			
18										
19	2.15									
20						3.15				
21										
22										
23		3.98			3.72					
24							2.65			
25										
26										
27						3.01				
28	2.95									
29										
30		4.02			3.60					
31										

NOTE.—First ice period Nov. 15, 1911.

FLAGSTAFF LAKE NEAR PLUSH, OREG.

Location.—In a slough at the south end of the lake in sec. 5, T. 35 S., R. 25 E., 15 miles north of Plush.

Records available.—May 31 to June 30, 1910; April 30 to December 31, 1911.

Gage.—Vertical staff.

The following gage readings were made during 1910: May 31, 4.15 feet; June 22, 3.90 feet; June 30, 3.82 feet.

Daily gage height, in feet, of Flagstaff Lake near Plush, Oreg., for 1911.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1								1.75	
2									
3					2.65				
4									
5							1.8		
6									
7		2.2							1.7
8				3.05					
9								1.75	
10									
11									
12			3.25				1.85		
13									
14		3.0		3.0	2.4				1.7
15									

Daily gage height, in feet, of Flagstaff Lake near Plush, Oreg., for 1911—Continued.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
16								1.75	
17									
18									
19							1.85		
20			3.1						
21				2.95		1.9			
22		3.05							
23								1.75	
24									
25									
26							1.8		
27									
28				2.7		1.9			1.65
29	2.4		3.1						
30		3.05						1.7	
31									

TWENTYMILE CREEK NEAR WARNER LAKE, OREG.

Location.—About one-fourth mile above the bridge at the mouth of the canyon in sec. 24, T. 40 S., R. 23 E., about 2 miles south of Warner Lake post office. It is below all tributaries.

Records available.—March 1, 1910, to December 31, 1911.

Drainage area.—126 square miles.

Gage.—Vertical staff in two sections about one-fourth mile above the bridge and above a fall in the stream. The gage was originally established at the bridge, but as the gage heights were affected by backwater from a dam below it was removed to the present site. So far as possible, however, all gage readings referred to the present gage have been reduced to the same datum.

Channel.—The bed is composed of bowlders and gravel and probably shifts slightly.

Discharge measurements.—Made from the highway bridge or by wading.

Winter flow.—Affected by ice.

Diversions.—Except for a small amount of water diverted in two ditches just above the gage, the records show the total run-off passing the station from the drainage area above.

Artificial control.—Backwater from the diversions dam below the bridge may reach the gage.

Accuracy.—Gage heights show marked diurnal fluctuations at times during the spring, thus causing considerable inaccuracy in the records.

Discharge measurements of Twentymile Creek near Warner Lake, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 24	J. Dubuis	3.90	450
24	.....do	4.39	550
Apr. 4	.....do	3.56	359
4	.....do	3.22	275
24	Davenport and Dubuis	2.38	133
29	J. Dubuis	2.17	102
May 15	.....do	1.80	50.8
July 24[a]	.....do	.80	12.4
Aug. 17[a]	R. W. Davenport	.20	4.2
Oct. 1[a]	Stokes and Crower	.28	5.4
Nov. 7[a]	.....do	.43	5.7
17[a]	.....do	.50	7.0

[a] Wading measurements. Not at regular station.

Daily gage height, in feet, of Twentymile Creek near Warner Lake, Oreg., for 1911.

[Geo. Stombaugh, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.5	1.1	0.6	5.2	2.05	2.4	1.5	0.5	0.1	0.3	0.4	0.4
2	.5	1.0	.6	5.0	2.1	2.6	1.5	.5	.1	.3	.4	.4
3	.5	1.0	.6	4.2	2.25	2.6	1.5	.5	.1	.3	.4	.4
4	.5	1.0	.6	3.8	2.3	2.5	1.4	.4	.1	.4	.4	.4
5	.5	1.0	.6	4.6	2.5	2.6	1.4	.4	.2	.4	.4	.4
6	.5	.9	.6	4.0	2.15	2.5	1.3	.4	.3	.3	.4	.4
7	.5	.9	.7	3.9	2.0	2.7	1.3	.4	.3	.3	.4	.4
8	.5	1.0	.6	4.3	2.1	2.7	1.2	.4	.2	.3	.5	.4
9	.5	1.1	.5	3.8	2.0	2.7	1.2	.4	.1	.3	.5	.4
10	.4	.9	.8	3.4	1.85	2.5	1.2	.3	.1	.4	.5	.5
11	.4	.6	.8	3.0	1.85	2.6	1.0	.3	.1	.4	.5	.5
12	.4	.6	.8	2.0	1.9	2.6	1.1	.3	.1	.3	.5	.5
13	.4	.5	.8	2.2	1.9	2.5	1.1	.3	.1	.3	.5	.5
14	.4	.9	1.0	2.15	1.85	2.7	1.1	.2	.1	.3	.6	.5
15	.4	.8	1.2	2.1	1.8	2.6	1.0	.2	.1	.3	.7	.5
16	.4	.7	1.45	2.4	2.0	2.4	1.0	.2	.1	.2	.7	.5
17	.4	.7	1.75	2.7	2.15	2.4	1.1	.2	.1	.2	.5	.5
18	.5	.6	2.05	2.6	2.5	2.4	1.1	.2	.1	.2	.5	.6
19	.5	.5	2.5	1.9	1.9	2.4	1.0	.1	.1	.2	.5	.7
20	.4	.5	3.0	1.95	1.8	2.4	1.0	.1	.1	.2	.5	.4
21	.4	.5	3.45	2.4	1.8	2.3	.9	.1	.1	.2	.5	.4
22	.4	.6	4.2	2.45	1.9	2.0	.9	.2	.1	.2	.5	.4
23	.4	.6	5.2	2.4	1.9	1.9	.9	.2	.1	.2	.5	.4
24	.5	.6	4.2	2.55	2.1	1.8	.8	.2	.2	.2	.5	.4
25	.5	.6	4.0	2.6	2.0	1.7	.8	.2	.2	.3	.4	.4
26	.5	.6	3.4	2.5	2.0	1.7	.8	.2	.3	.3	.4	.4
27	.5	.6	3.5	2.3	2.0	1.6	.7	.1	.4	.3	.4	.4
28	.5	.6	4.6	2.35	1.9	1.6	.7	.1	.3	.3	.5	.4
29	.5	.....	4.8	2.25	2.0	1.5	.6	.1	.3	.3	.5	.4
30	1.0	.....	5.2	2.05	2.1	1.4	.5	.1	.3	.4	.4	.4
31	1.3	.....	5.2	.....	2.1	.....	.5	.1	.....	.4	.....	.4

NOTE.—Gage heights probably affected by ice about Jan. 1 to Mar. 13 and about Dec. 16 to 31.

Daily discharge, in second-feet, of Twentymile Creek near Warner Lake, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	810	85	131	36	7	3.5	5	6	6
2	.....	750	91	163	36	7	3.5	5	6	6
3	.....	514	110	163	36	7	3.5	5	6	6
4	.....	410	117	147	31	6	3.5	6	6	6
5	.....	630	147	163	31	6	4	6	6	6
6	.....	460	97	147	26	6	5	5	6	6
7	.....	434	79	181	26	6	5	5	6	6
8	.....	542	91	181	22	6	4	5	7	6
9	.....	410	79	181	22	6	3.5	5	7	6
10	.....	318	63	147	22	5	3.5	6	7	7
11	.....	248	63	163	16	5	3.5	6	7	7
12	.....	79	68	163	19	5	3.5	5	7	7
13	.....	103	68	147	19	5	3.5	5	7	7
14	16	97	63	181	19	4	3.5	5	8	7
15	22	91	58	163	16	4	3.5	5	10	7
16	33	131	79	131	16	4	3.5	4	10	.....
17	54	181	97	131	19	4	3.5	4	7	.....
18	85	163	147	131	19	4	3.5	4	7	.....
19	147	68	68	131	16	3.5	3.5	4	7	.....
20	238	74	58	131	16	3.5	3.5	4	7	.....
21	329	131	58	117	14	3.5	3.5	4	7	.....
22	514	139	68	79	14	4	3.5	4	7	.....
23	810	131	68	68	14	4	3.5	4	7	.....
24	514	155	91	58	12	4	4	4	7	.....
25	460	163	79	49	12	4	4	5	6	.....
26	318	147	79	49	12	4	5	5	6	.....
27	340	117	79	42	10	3.5	6	5	6	.....
28	630	124	68	42	10	3.5	5	5	7	.....
29	690	110	79	36	8	3.5	5	5	7	.....
30	810	85	91	31	7	3.5	5	6	6	.....
31	810	.....	91	.....	7	3.5	.....	6	.....	.....

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Twentymile Creek near Warner Lake, Oreg., for 1911.

[Drainage area, 126 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	.....	.....	5	0.040	0.05	307	D.
February	.....	.....	3	.024	.02	167	D.
March	810	.....	223	1.77	2.04	13,700	A.
April	810	68	260	2.06	2.30	15,500	A.
May	147	58	83.2	.660	.76	5,120	B.
June	181	31	122	.968	1.08	7,260	A.
July	36	7	18.8	.149	.17	1,160	B.
August	7	3.5	4.68	.037	.04	288	C.
September	6	3.5	3.95	.031	.03	235	C.
October	6	4	4.9	.039	.04	301	C.
November	10	6	6.9	.055	.06	411	C.
December	.....	.....	5.7	.045	.05	350	D.
The year	810	.....	61.8	.490	6.64	44,800	

NOTE.—Discharge Jan. 1 to Mar. 13 and Dec. 16 to 31 estimated, because of ice, from climatologic records.
Mean discharge Mar. 1 to 13 estimated 6 second-feet.
Mean discharge Dec. 16 to 31 estimated 5 second-feet.

DEEP CREEK AT BIG VALLEY, NEAR LAKEVIEW, OREG.

Location.—In sec. 4, T. 40 S., R. 22 E., near the Big Valley dam site, about 9 miles from Mud Creek stage station and about 12 miles east of Lakeview.

Records available.—May 3, 1911, to December 31, 1911.

Drainage area.—63 square miles.

Gage.—Vertical staff.

Channel.—Not likely to shift; bed composed of gravel and stone.

Discharge measurements.—Made from a cable or by wading.

Winter flow.—At times affected by ice.

Storage.—The dam site at Big Valley can probably be developed to any storage capacity warranted by the available water supply.

Cooperation.—Station maintained in cooperation with the Warner Lake Irrigation Co.

Discharge measurements of Deep Creek at Big Valley, near Lakeview, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	dis-charge.
		Feet.	*Sec.-feet.*
June 15	John Dubuis	2.67	490
July 25	.....do	.30	22.2
Aug. 19	R. W. Davenport	.06	9.1
Dec. 5	W. O. Harmon	− .30	10.0

Daily gage height, in feet, of Deep Creek at Big Valley, near Lakeview, Oreg., for 1911.

[Bessie Loftus, observer.]

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.4	1.4			0.10	0.30	
2		2.5	1.4					
3	2.1	2.7						
4	2.2	2.6	1.0			.15	.35	
5	2.1	2.9						−0.30
6	2.0	2.8	.9					
7	2.0	3.0				.18		
8	2.0	2.8	.8					
9	1.7	2.7						
10	1.6	2.7	.9			.20		
11		2.6					.25	
12	1.9	2.7	.6					
13	1.7	2.5						
14	1.6	3.0	.5			.21		
15	1.6	2.8						
16	1.5	2.7	.5					
17	1.7	2.4			0.10	.21		
18	1.6	2.5	.6				.20	
19	1.9	2.3		0.06				
20	1.5	2.4	.5			.25		
21	1.7	1.9						
22	1.8	1.9	.4					
23	1.8	1.9			.15	.30		
24	1.6	1.8	.3		.15			
25	2.0	1.4	.3				.20	
26	1.8	1.4				.30		
27	2.2	1.5						
28	1.9	1.4			.15			
29	2.0	1.4						
30	2.1	1.5				.35	.17	
31	2.3							

Daily discharge, in second-feet, of Deep Creek at Big Valley, near Lakeview, Oreg., for 1911.

Day.	May.	June.	July.	Sept.	Oct.	Nov.	Day.	May.	June.	July.	Sept.	Oct.	Nov.
1		400	161		11	22	16	180	495	37		17	17
2		430	161		12	23	17	220	400	42	11	17	16
3	315	495	128		13	25	18	200	430	46	11	18	16
4	342	460	95		14	26	19	265	371	42	12	18	16
5	315	565	88		14	25	20	180	400	37	12	19	16
6	290	530	81		15	24	21	220	265	33	13	20	16
7	290	600	74		15	23	22	242	265	29	13	21	16
8	290	530	68		15	22	23	242	265	26	14	22	16
9	220	495	74		16	21	24	200	242	22	14	22	16
10	200	495	81		16	20	25	290	161	22	14	22	16
11	232	460	64		16	19	26	242	161		14	22	16
12	265	495	46		16	19	27	342	180		14	23	15
13	220	430	42		17	18	28	265	161		14	24	15
14	200	600	37		17	18	29	290	161		13	25	15
15	200	530	37		17	17	30	315	180		12	26	14
							31	371				24	

NOTE.—Daily discharge determined from a rating curve not well defined. Discharge interpolated for days on which gage was not read except July 26 to Sept. 16, and Dec. 1–31.

Monthly discharge of Deep Creek at Big Valley, near Lakeview, Oreg., for 1911.

[Drainage area, 63 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
May 3–31	371	180	257	4.08	4.40	14,800	B.
June	600	161	388	6.15	6.87	23,100	B.
July	161		53.6	.851	.98	3,300	B.
August			10	.159	.18	615	D.
September			11.4	.181	.20	678	D.
October	26	11	18.2	.289	.33	1,120	B.
November	26	14	18.6	.295	.33	1,100	B.
December			10	.159	.18	615	D.
The period						45,300	

NOTE.—Discharge July 26 to 31, approximately 15 second-feet; Aug. 1 to Sept 16, and Dec. 1 to 31, 10 second-feet; estimated from discharge measurements made Aug. 19 and Dec. 5.

DEEP CREEK[1] AT ADEL, OREG.

Location.—In the SE. ¼ NW. ¼ sec. 21, T. 39 S., R. 24 E., about one-eighth mile above the wagon bridge crossing the creek at Adel; below all tributaries.

Records available.—May 11, 1909, to December 31, 1911.

Drainage area.—272 square miles.

Gage.—A vertical staff in two sections about 500 feet above the bridge and above a series of rapids; datum unchanged.

Channel.—Probably permanent; bed of stream composed of gravel and stone.

Discharge measurements.—Made from the wagon bridge.

Diversions.—Several small ditches divert water for irrigation near the headwaters of the stream and five ditches take out within 6 or 8 miles above the station and carry water around it to irrigate several hundred acres of land; 2,000 or 3,000 acres of land are watered by natural flooding near Big Valley and Crane Lake, but much of the water is probably returned to the stream. The combined capacity of the five ditches above mentioned is about 30 second-feet. Measurements of the combined discharge showed 25 second-feet of water in June, 1910; 20 second-feet in April, 1911; 18 second-feet in July, 1911. Below the bridge the grade of the stream is very flat and water is diverted into the M. C. ditch by means of a temporary dam which is repaired at the beginning of each irrigation season.

Winter flow.—Relation between gage height and discharge affected by ice during periods of extreme cold weather and occasionally by backwater from ice jams.

Accuracy.—Determination of mean gage height is rendered rather difficult during the spring by the diurnal fluctuations. Gage heights may be affected by backwater from the temporary dam below the station.

Cooperation.—Station maintained in cooperation with the Warner Lake Irrigation Co.

Discharge measurements of Deep Creek at Adel, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 22	J. Dubuis	4.80	542
23	do	5.80	1,360
27	do	4.30	364
Apr. 1	do	5.25	768
3	do	5.35	803
14	do	3.65	156
24	R. W. Davenport	4.75	557
24	J. Dubuis	4.72	576
May 8	do	4.55	522
15	do	4.15	339
July 21[a]	do	3.10	43.5
Aug. 21[a]	R. W. Davenport	2.68	7.0

[a] Waded above gage.

[1] Formerly called Warner Creek.

Daily gage height, in feet, of Deep Creek at Adel, Oreg., for 1911.

[Miss Myrtel Wible, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.1	3.1	3.1	5.8	4 35	4.35	3.4	2.8	2.8	2.8	2.9	3.0
2	3.0	3.1	3.1	5.15	4.05	4.75	3.4	2.8	2.8	2.8	2.9	3.0
3	3.0	3.1	3.1	5.2	3.95	4.9	3.4	2.8	2.8	2.8	2.9	3.0
4	3.0	3.1	3.1	4.55	3.95	4.8	3.4	2.8	2.85	2.8	2.9	3.0
5	3.0	3.1	3.1	5.3	5.15	4.8	3.3	2.8	2.9	2.8	2.9	3.0
6	3.0	3.1	3.0	4.6	5.2	4.6	3.3	2.8	2.9	2.8	2.9	3.0
7	3.0	3.1	3.0	4.45	4.8	4.7	3.3	2.8	2.8	2.8	2.9	3.0
8	3.1	3.2	3.0	4.8	4.3	4.7	3.3	2.8	2.8	2.8	2.9	3.0
9	3.05	3.2	3.1	4.7	4.2	4.7	3.25	2.8	2.8	2.8	3.0	2.9
10	3.0	3.2	3.1	4.4	4.1	4.65	3.2	2.8	2.8	2.8	3.0	2.9
11	3.0	3.2	3.2	4.25	4.0	4.55	3.2	2.8	2.8	2.8	3.0	2.9
12	3.0	3.35	3.1	3.55	4.8	4.55	3.2	2.8	2.8	2.8	3.0	2.9
13	3.0	3.3	3.0	3.9	4.5	4.75	3.2	2.8	2.8	2.8	3.0	2.9
14	3.0	3.2	2.95	4.05	4.8	5.3	3.2	2.8	2.8	2.8	3.1	2.9
15	3.0	3.1	3.1	4.15	4.6	4.95	3.2	2.8	2.8	2.8	3.1	2.9
16	3.0	3.1	3.25	4.3	4.65	4.75	3.2	2.8	2.8	2.8	3.1	2.9
17	3.0	3.1	3.2	3.5	4.6	4.55	3.2	2.8	2.8	2.8	2.9	2.9
18	3.0	3.1	3.25	3.7	4.8	4.5	3.35	2.8	2.8	2.8	2.8	2.9
19	3.05	3.1	3.25	3.7	4.5	4.5	3.25	2.8	2.8	2.8	2.8	2.9
20	3.15	3.1	3.55	3.7	4.4	4.4	3.15	2.8	2.8	2.8	2.9	2.9
21	3.15	3.1	3.95	3.75	4.35	4.25	3.1	2.8	2.8	2.8	2.9	2.9
22	3.25	3.1	4.95	4.5	4.5	4.05	3.0	2.8	2.8	2.8	2.9	2.9
23	3.25	3.1	5.8	4.25	4.75	4.0	3.0	2.8	2.8	2.8	2.8	2.9
24	3.35	3.1	5.3	4.35	4.7	3.85	2.9	2.8	2.8	2.8	2.8	2.8
25	3.35	3.1	4.9	4.8	4.65	3.8	2.9	2.8	2.8	2.8	2.8	2.8
26	3.35	3.1	4.7	5.0	4.45	3.7	2.9	2.8	2.8	2.8	2.8	2.8
27	3.3	3.0	4.85	4.9	4.4	3.6	2.9	2.8	2.8	2.8	2.9	2.8
28	3.3	3.0	4.6	4.65	4.3	3.5	2.85	2.8	2.8	2.9	2.9	2.8
29	3.3	.....	4.95	4.65	4.35	3.5	2.8	2.8	2.8	2.9	2.9	2.8
30	3.2	.....	5.45	4.35	4.15	3.45	2.8	2.8	2.8	2.9	2.9	2.8
31	3.2	.....	5.8	.....	4.0	.....	2.8	2.8	.....	2.9	.....	2.8

NOTE.—Ice Jan. 1 to about Mar. 13. Probably little or no effect from ice during December.

Daily discharge, in second-feet, of Deep Creek at Adel, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1,260	390	390	99	11	11	11	18	30
2	.....	780	278	565	99	11	11	11	18	30
3	.....	810	244	640	99	11	11	11	18	30
4	.....	470	244	590	99	11	14	11	18	30
5	.....	880	780	590	89	11	18	11	18	30
6	.....	490	810	490	80	11	18	11	18	30
7	.....	430	590	540	80	11	11	11	18	30
8	.....	590	370	540	80	11	11	11	18	30
9	.....	540	330	540	70	11	11	11	30	18
10	.....	410	295	515	61	11	11	11	30	18
11	.....	350	260	470	61	11	11	11	30	18
12	.....	134	590	470	61	11	11	11	30	18
13	.....	229	250	565	61	11	11	11	30	18
14	24	278	590	880	61	11	11	11	44	18
15	44	312	490	665	61	11	11	11	44	18
16	70	370	515	565	61	11	11	11	44	18
17	61	122	490	470	61	11	11	11	18	18
18	70	171	590	450	90	11	11	11	11	18
19	70	171	450	450	70	11	11	11	11	18
20	134	171	410	410	52	11	11	11	18	18
21	244	185	390	350	44	11	11	11	18	18
22	665	450	450	278	30	11	11	11	18	18
23	1,260	350	565	260	30	11	11	11	11	18
24	880	390	540	214	18	11	11	11	11	11
25	640	590	515	199	18	11	11	11	11	11
26	540	690	430	171	18	11	11	11	11	11
27	615	640	410	145	18	11	11	11	18	11
28	490	515	370	122	14	11	11	18	18	11
29	665	515	390	122	11	11	11	18	18	11
30	985	390	312	110	11	11	11	18	18	11
31	1,260	.....	260	.....	11	11	.....	18	.....	11

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Deep Creek at Adel, Oreg., for 1911.

[Drainage area, 272 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	.....	.....	25	0.092	0.11	1,540	D.
February	.....	.....	15	.055	.06	833	D.
March	1,260	.....	290	1.07	1.23	17,800	B.
April	1,260	122	456	1.68	1.87	27,100	B.
May	810	244	445	1.64	1.89	27,400	B
June	880	110	426	1.57	1.75	25,300	B.
July	99	11	55.1	.203	.23	3,390	A.
August	11	11	11.0	.040	.05	676	D.
September	18	11	11.6	.043	.05	690	D.
October	18	11	11.9	.044	.05	732	D.
November	44	11	21.2	.078	.09	1,260	B.
December	30	11	19.3	.071	.08	1,190	D.
The year	1,260	.....	149	.548	7.46	108,000	

NOTE.—Discharge Jan. 1 to Mar. 13, estimated, because of ice, from climatologic records. Mean discharge Mar. 1 to 13 estimated 20 second-feet.

CAMAS CREEK NEAR PLUSH, OREG.

Location.—In sec. 6, T. 39 S., R. 22 E., about half a mile above the mouth of Mud Creek, 20 miles east of Lakeview and about 22 miles southeast of Plush.

Records available.—April 25 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—In gravel and clay; shifting; banks soft; gradient moderate; valley open. At high stages a channel about one-fourth of a mile south of the gage carries considerable water.

Discharge measurements.—Made from a footbridge or by wading near gage.

Winter flow.—Ice present at times.

Accuracy.—Gage heights show large diurnal fluctuations during the spring and are affected by ice at times during the winter; high degree of accuracy is not possible. No satisfactory estimate of discharge can be made yet on account of the unstable condition of the stream bed.

Cooperation.—Station maintained in cooperation with the Warner Lake Irrigation Co.

Discharge measurements of Camas Creek near Plush, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
May 11	John Dubuis	2.62	86.0
18	.....do	2.77	89.8
June 16	.....do	1.65	14.2
July 26	.....do	1.00	1.1
Aug. 22	R. W. Davenport	.92	*a*.6
Dec. 22	W. O. Harmon	1.49	18.5

a Estimated.

Daily gage height, in feet, of Camas Creek near Plush, Oreg., for 1911.

[H. J. Stine, observer.]

Day.	Apr.	May.	June.	Dec.	Day.	Apr.	May.	June.	Dec.	Day.	Apr.	May.	June.	Dec.
1	.....	3.7	2.5	.....	11	.....	2.6	1.95	.....	21	.....	2.5	1.45	.....
2	.....	3.2	2.3	.....	12	.....	2.5	1.8	.....	22	.....	2.2	1.4	.....
3	.....	3.6	2.1	.....	13	.....	2.55	1.8	.....	23	.....	2.4	1.4	.....
4	.....	3.9	2.3	.....	14	.....	2.5	1.75	.....	24	.....	2.3	1.35	.....
5	.....	3.7	2.2	.....	15	.....	2.5	1.7	.....	25	.....	2.25	1.3	1.5
6	.....	3.5	2.3	.....	16	.....	2.7	1.7	.....	26	4.0	2.1	1.3	.....
7	.....	3.3	2.4	.....	17	.....	2.6	1.65	.....	27	4.1	2.4	1.3	1.5
8	.....	3.1	2.25	.....	18	.....	2.8	1.6	.....	28	3.9	2.45	1.3	.....
9	.....	2.8	2.2	.....	19	.....	2.5	1.55	.....	29	3.7	2.5	1.3	1.5
10	.....	.....	2.0	.....	20	.....	2.4	1.5	.....	30	3.5	2.4	1.3	.....
										31	.....	2.3	.....	.....

NOTE.—Ice during the latter part of December.

MUD CREEK NEAR PLUSH, OREG.

Location.—In sec. 32, T. 38 S., R. 22 E., just above the crossing of the road between Lakeview and Plush, about half a mile above the junction of Mud Creek with Camas Creek and 22 miles from Plush.

Records available.—April 25 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—Probably shifting; bed composed of bowlders and gravel.

Discharge measurements.—Made from a footbridge or by wading.

Winter flow.—No information.

Accuracy.—Conditions are more favorable for accurate determination of discharge than at the station on Camas Creek, but estimates are withheld until additional data are available.

Cooperation.—Station maintained in cooperation with Warner Lake Irrigation Co.

Discharge measurements of Mud Creek near Plush, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 26	Davenport & Dubuis	2.20	69.6
May 12	John Dubuis	2.02	86.8
19	.....do	1.55	43.7
June 16	.....do	1.50	35.6
July 26	.....do	.80	6.8
Aug. 22	R. W. Davenport	.72	3.8
Dec. 24	W. O. Harmon	.80	7.8

Daily gage height, in feet, of Mud Creek near Plush, Oreg., for 1911.

[H. J. Stine, observer.]

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.6	2.3						
2		1.9	2.2						
3		2.5	2.1						
4		2.8	2.4						
5		2.6	2.2						
6		2.3	2.3						
7		2.1	2.5						
8		1.9	2.0						
9		1.6	1.95						
10			1.9						
11		1.9	1.75						
12		2.0	1.7						
13		2.1	1.65						
14		2.1	1.65						
15		2.05	1.6						
16		2.2	1.6						
17		2.0	1.55						
18		1.8	1.5						
19		1.5	1.4						
20		1.8	1.4						
21		2.3	1.3						
22		2.6	1.2		0.72				
23		2.7	1.2						
24		2.1	1.2						0.8
25		2.0	1.15						.8
26	2.2	1.9	1.15	0.8					
27	2.1	2.0	1.15						.8
28	1.8	2.1	1.1						
29	1.7	2.3	1.1						.8
30	1.6	2.6	1.1						
31		2.1							.85

HONEY CREEK AT CHALSTRAND'S RANCH, NEAR PLUSH, OREG.

Location.—In sec. 13, T. 36 S., R. 22 E., 12 miles from Plush, Oreg., 1¼ miles above the mouth of Snyder Creek.

Records available.—June and July, 1910; January 1, 1911, to December 31, 1911, when station was discontinued.

Drainage area.—Not measured.

Gages.—Two staff gages have been used and the relation between them determined from simultaneous readings.

Channel.—In alluvial clay; probably permanent.

Discharge measurements.—Made by wading.

Winter flow.—Relation of gage height to discharge affected by ice.

Accuracy.—The creek shows considerable diurnal fluctuations, and for this reason the determinations of discharge are liable to considerable error.

Discharge measurements of Honey Creek at Chalstrand's ranch, near Plush, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 27	R. W. Davenport	2.88	12.2
July 27	John Dubuis	.13	4.6
Dec. 22	W. O. Harmon	*a*.70	11.6

a Gage height affected by ice piled on control.

Daily gage height, in feet, of Honey Creek at Chalstrand's ranch, near Plush, Oreg., for 1911.

[C. A. Chalstrand, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.1	1.2	1.2	1.4	2.2	2.9	1.1	−0.1	−0.2	0.1	0.4	0.3
2	1.1	1.2	1.2	1.5	2.3	2.4	.9	− .1	− .15	.25	.35	.3
3	1.1	1.2	1.4	1.5	3.3	2.5	.9	.0	− .2	.25	.....	.3
4	1.1	1.2	1.4	1.6	3.0	2.5	.7	.05	− .1	.25	.4	.3
5	1.1	1.2	1.4	1.6	2.9	2.5	.7	.05	.05	.3	.35	.3
6	1.1	1.2	1.5	1.4	2.5	2.3	.5	.0	.1	.25	.4	.3
7	1.1	1.2	1.5	1.6	2.6	2.35	.5	.0	.05	.25	.35	.4
8	1.1	1.2	1.5	1.95	2.6	2.2	.3	− .05	− .05	.....	.4	.4
9	1.1	1.2	1.5	1.9	2.25	2.2	.4	− .05	− .1	.....	.35	.4
10	1.1	1.2	1.7	1.75	2.15	2.0	.4	− .05	− .05	.....	.4	.4
11	1.1	1.2	1.7	1.7	2.5	2.1	.4	− .1	.....	.35	.4	.4
12	1.1	1.2	1.7	1.7	2.6	1.9	.4	− .1	.....	.35	.4	.4
13	1.1	1.2	1.7	1.55	2.4	1.95	.4	− .1	.....	.35	.4	.4
14	1.1	1.2	1.7	1.4	2.25	1.9	.4	.....	− .05	.4	.45	.4
15	1.1	1.2	1.1	1.4	2.3	1.9	.4	− .1	− .05	.4	.55	.4
16	1.1	1.2	1.3	1.5	2.5	1.65	.3	− .1	− .05	.35	.5	.4
17	1.1	1.4	1.5	1.65	2.3	1.65	.3	− .1	− .05	.35	.5	.4
18	1.1	1.2	1.5	1.8	2.1	1.5	.3	− .15	− .05	.35	.4	.4
19	1.1	1.2	1.8	1.5	2.5	1.5	.35	− .15	− .05	.35	.4	.....
20	1.1	1.2	1.8	1.4	2.25	1.25	.3	− .1	− .05	.35	.4	.4
21	1.1	1.2	2.2	1.65	2.3	1.35	.2	− .15	− .05	.4	.4	.....
22	1.1	1.2	2.2	1.9	2.5	1.2	.2	− .1	− .05	.35	.3	.4
23	1.1	1.2	2.2	2.35	2.5	1.25	.2	− .15	− .05	.4	.4	.....
24	1.1	1.2	2.0	2.6	2.6	1.2	.15	− .1	− .05	.35	.35	.4
25	1.1	1.2	2.0	2.9	2.3	1.2	.15	− .15	.0	.4	.45	.....
26	1.1	1.2	1.8	3.1	2.3	1.0	.1	− .1	.1	.35	.55	.4
27	1.1	1.2	1.3	3.0	2.15	1.1	.15	− .1	.1	.35	.....	.....
28	1.1	1.2	1.1	2.4	2.2	1.0	.0	− .15	.1	.35	.3	.4
29	1.8	.....	1.1	2.3	2.15	1.0	.0	− .1	.1	.4	.4	.....
30	2.0	.....	1.1	2.4	2.3	1.1	− .05	− .2	.1	.....	.3	.4
31	1.5	.....	1.1	.....	2.5	.....	− .05	− .15	.....	.35	.....	.....

NOTE.—Ice at station Jan. 1 to Mar. 14 and during a large part of the period Nov. 9 to Dec. 31. Gage heights Jan. 1 to Apr. 6 read on Warner Lake Irrigation Co.'s gage; Apr. 7 to Dec. 31, on United States Geological Survey gage.

Daily discharge, in second-feet, of Honey Creek at Chalstrand's ranch, near Plush, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	55	69	123	21	3.5	3.0	5.0	8
2	.....	63	76	83	16	3.5	3.2	6	8
3	.....	63	162	91	16	4.0	3.0	6	8
4	.....	71	132	91	12	4.5	3.5	6	8
5	.....	71	123	91	12	4.5	4.5	7	8
6	.....	55	91	76	9	4.0	5.0	6	8
7	.....	38	99	80	9	4.0	4.5	6	8
8	.....	54	99	69	7	3.8	3.8	6	8
9	.....	52	72	69	8	3.8	3.5	7	8
10	.....	44	66	57	8	3.8	3.8	7	8
11	.....	42	91	63	8	3.5	3.8	8	8
12	.....	42	99	52	8	3.5	3.8	8	8
13	.....	36	83	56	8	3.5	3.8	8	8
14	.....	30	72	52	8	3.5	3.8	8	8
15	35	30	76	52	8	3.5	3.8	8	10
16	48	34	91	42	7	3.5	3.8	8	9
17	63	40	76	42	7	3.5	3.8	8	9
18	63	47	63	34	7	3.2	3.8	8	8
19	88	34	91	34	8	3.2	3.8	8	8
20	88	30	72	26	7	3.5	3.8	8	8

Daily discharge, in second-feet, of Honey Creek at Chalstrand's ranch, near Plush, Oreg., for 1911—Continued.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
21	124	40	76	28	6	3.2	3.8	8	8
22	124	52	91	24	6	3.5	3.8	8	7
23	124	80	91	26	6	3.2	3.8	8	8
24	106	99	99	24	6	3.5	3.8	8	8
25	106	123	76	24	6	3.2	4.0	8	8
26	88	142	76	18	5	3.5	5.0	8	10
27	48	132	66	21	6	3.5	5.0	8	9
28	35	83	69	18	4	3.2	5.0	8	7
29	35	76	66	18	4	3.5	5.0	8	8
30	35	83	76	21	3.8	3.0	5.0	8	7
31	35	.....	91	.....	3.8	3.2	.....	8	.....

NOTE.—Daily discharge Apr. 7 to Nov. 30 determined from a poorly defined rating curve. Discharge Mar. 15 to Apr. 6 determined from the rating curve used for the latter part of the year by means of a curve of relation between the two gages. Discharge interpolated for days on which gage was not read. Discharge assumed unaffected by ice during November.

Monthly discharge of Honey Creek at Chalstrand's ranch, near Plush, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	.....	.....	5	307	D.
February	.....	.....	3	167	D.
March	124	.....	46.5	2,660	B.
April	142	30	61.4	3,650	B.
May	162	66	86.5	5,320	B.
June	123	18	50.2	2,990	B.
July	21	3.8	8.08	497	C.
August	4.5	3.0	3.56	219	C.
September	5.0	3.0	4.00	238	C.
October	8	5.0	7.4	455	C.
November	10	7	8.1	482	C.
December	.....	.....	6	369	D.
The year	162	3.0	24.5	17,500	

NOTE.—Discharge Jan. 1 to Mar. 14 and Dec. 1 to 31 estimated, because of ice, from climatologic records and from a consideration of the discharge at the station below this one. Mean discharge Mar. 1 to 14 estimated 14 second-feet, varying from about 3 to 23 second-feet. No correction made to November discharge.

HONEY CREEK NEAR PLUSH, OREG.

Location.—In the SW. ¼ sec. 20, T. 36 S., R. 24 E., half a mile above the mouth of the canyon, 1½ miles northwest of Plush, and 1 mile above the wagon bridge near Plush; below all tributaries.

Records available.—May 13, 1909, to December 31, 1911.

Drainage area.—232 square miles.

Gages.—The first gage was a vertical staff fastened to the wagon bridge, but as the gage heights were affected by backwater from a temporary diversion dam below the station a vertical staff gage, in two sections, was installed by the Warner Lake Irrigation Co., February 24, 1910, half a mile above the mouth of the canyon and 1 mile above the bridge. On March 10, 1911, the gage was reset on the opposite side of the river and the datum was lowered 1.0 foot.

Channel.—Bed composed of gravel; shifts slightly.

Discharge measurements.—At the original site measurements were made from the bridge; now made from cable near the gage; at times of extreme low water measurements are made by wading.

Winter flow.—Slightly affected by ice.

Diversions.—The records at this point show the total run-off from the basin above the station except for a small amount of water diverted near the head of the stream and used to irrigate a few hundred acres.

Accuracy.—Records fairly reliable, although some inaccuracy is caused by diurnal fluctuations of the stream and by slight changes in conditions of flow during 1911.

Cooperation.—Station maintained in cooperation with the Warner Lake Irrigation Co.

Discharge measurements of Honey Creek near Plush, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 24	J. Dubuis	3.75	615
28	....do	2.20	179
29	....do	1.92	120
29	....do	2.50	251
Apr. 22	Davenport and Dubuis	1.92	111
May 9	J. Dubuis	1.88	113
July 27	....do	− .20	4.85
Aug. 17[a]	R. W. Davenport	− .35	2.0

[a] Waded 25 feet below gage.

Daily gage height, in feet, of Honey Creek near Plush, Oreg., for 1911.

[A. C. Snow, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	−0.35	.....	0.90	2.45	2.00	2.90	0.45	.....	.....	−0.40	.....	.....
2	.....	.....	.90	2.40	1.85	2.45	.40	.....	.....	.....	−0.30	.....
3	− .30	.....	1.05	2.60	2.10	2.35	.30	.....	−0.45	.....	.....	−0.20
4	.....	.....	1.05	1.80	2.45	2.45	.25	−0.01	.....	− .35	.....	.....
5	− .30	.....	1.20	1.78	2.70	2.40	.20	.....	.....	.....	− .30	.....
6	.....	.....	1.10	1.60	2.15	2.35	.15	.....	.....	.....	.....	.....
7	.....	.....	1.30	1.78	2.30	2.45	.10	.....	− .40	.....	.....	− .20
8	.....	.....	.....	1.82	2.40	2.40	.09	− .06	.....	− .35	.....	.....
9	− .20	.....	.70	1.78	2.00	2.40	.....	.....	.....	.....	− .25	.....
10	.....	.....	.85	1.40	1.85	2.40	.05	.....	− .45	.....	.....	− .15
11	.....	.....	1.00	1.50	2.00	2.35	.....	.....	.....	.....	.....	.....
12	− .30	.....	.80	1.60	2.35	2.30	.....	− .06	.....	− .30	− .20	.....
13	.....	.....	1.10	1.30	2.05	2.25	.....	.....	− .40	.....	.....	.....
14	− .35	.....	1.60	1.05	1.90	2.10	− .10	.....	.....	.....	.....	− .10
15	.....	.....	2.30	1.35	1.85	2.05	.....	.....	.....	− .30	.....	.....
16	.....	.....	3.00	1.40	2.10	1.95	.....	− .10	.....	.....	− .20	.....
17	− .10	−0.30	3.20	1.70	1.85	1.90	− .02	.....	− .35	.....	.....	.70
18	.....	.....	3.00	1.35	1.85	1.70	.....	.....	.....	.....	.....	.....
19	.....	− .30	3.50	1.20	1.80	1.60	.....	− .20	.....	− .30	− .20	.....
20	− .15	.....	3.70	1.15	1.80	1.50	− .62	.....	.....	.....	.....	.....
21	.....	− .30	4.20	1.35	2.00	1.20	.....	.....	− .35	.....	.....	1.00
22	− .25	.....	4.40	2.35	2.20	1.10	.....	− .35	.....	− .35	.....	.....
23	.....	.....	4.60	2.20	2.40	1.10	.....	.....	.....	.....	− .20	.....
24	− .25	.....	3.70	2.50	2.40	1.00	− .55	.....	− .40	.....	.....	.60
25	.....	.....	3.00	2.70	2.00	.80	.....	.....	.....	.....	.....	.....
26	.....	.....	2.60	2.90	1.90	.70	.....	− .40	.....	− .35	− .20	.....
27	− .30	− .25	2.20	2.50	1.95	.65	.....	.....	.....	.....	.....	.....
28	.....	.....	3.00	2.55	2.00	.60	− .65	.....	− .40	.....	.....	.60
29	.....	.....	2.10	2.00	2.05	.55	.....	− .50	.....	.....	.....	.....
30	− .20	.....	2.65	1.90	2.15	.50	.....	.....	.....	− .30	− .25	.....
31	.....	.....	2.70	.....	2.20	.....	.....	.....	.....	.....	.....	.65

NOTE.—Gage heights Jan. 1 to Mar. 9 increased 1.0 foot to bring to same datum as gage established Mar. 10, 1911. No notes regarding ice during January and February and first part of March. Ice latter part of December.

Daily discharge, in second-feet, of Honey Creek near Plush, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	234	136	352	17	6	1.5	2	3	4
2	.....	222	109	234	16	7	1.5	2	3	5
3	.....	272	156	210	14	8	1.5	2.5	3	5
4	.....	101	234	234	13	9	1.5	2.5	3	5
5	.....	98	298	222	12	9	2	2.5	3	5
6	.....	75	166	210	11	9	2	2.5	3	5
7	.....	98	198	234	10	8	2	2.5	3	5
8	.....	104	222	222	10	8	2	2.5	4	5
9	.....	98	136	222	9	8	1.5	2.5	4	6
10	.....	56	109	222	9	8	1.5	2.5	4	6
11	.....	65	136	210	9	8	1.5	3	5	6
12	50	75	210	198	8	8	2	3	5	6
13	76	48	146	187	7	8	2	3	5	7
14	134	35	117	156	6	8	2	3	5	7
15	258	52	109	146	6	7	2	3	5	7
16	430	56	156	126	7	7	2.5	3	5	8
17	490	87	109	126	8	7	2.5	3	5	.....
18	430	52	109	87	5	6	2.5	3	5	.....
19	600	42	101	75	3	5	2.5	3	5	.....
20	680	40	101	65	.9	4	2.5	3	5	.....
21	890	52	136	42	1.0	3	2.5	2.5	5	.....
22	990	210	176	37	1.0	2.5	2	2.5	5	.....
23	990	176	222	37	1.1	2.5	2	2.5	5	.....
24	600	246	222	33	1.2	2	2	2.5	5	.....
25	380	298	136	27	1.1	2	2	2.5	5	.....
26	272	352	117	24	1.0	2	2	2.5	5	.....
27	176	246	126	22	.9	2	2	2.5	5	.....
28	380	259	136	21	.8	1	2	2.5	5	.....
29	156	136	146	20	2.0	1	2	3	4	.....
30	285	117	166	18	3.2	1	2	3	4	.....
31	298	.....	176	.....	4.5	1	.....	3	.....	.....

NOTE.—Daily discharge Mar. 12 to 22 and July 27 to Dec. 16 determined from a rating curve fairly well defined; discharge Mar. 23 to July 26 from a rating curve well defined above 100 second-feet and poorly defined below that point. Discharge interpolated for days on which gage was not read.

Monthly discharge of Honey Creek near Plush, Oreg., for 1911.

[Drainage area, 232 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	.....	.....	7	0.030	0.03	430	D.
February	.....	.....	4	.017	.02	222	D.
March	990	.....	285	1.23	1.42	17,500	C.
April	352	35	133	.573	.64	7,910	B.
May	298	101	155	.668	.77	9,530	B.
June	352	18	130	.560	.62	7,740	C.
July	17	.8	6.41	.028	.03	394	D.
August	9	1	5.42	.023	.03	333	D.
September	2.5	1.5	1.98	.0085	.009	118	D.
October	3	2	2.68	.012	.01	165	D.
November	5	3	4.37	.019	.02	260	D.
December	.....	.....	5.3	.023	.03	326	D.
The year	990	.....	22.2	.268	3.629	44,900	

NOTE.—Discharge Jan. 1 to Mar. 11 and Dec. 17 to 31 estimated. The effect from ice was slight. Mean discharge Mar 1 to 11 estimated 25 second-feet. Mean discharge Dec. 17 to 31 estimated 5 second-feet.

TWELVEMILE CREEK NEAR PLUSH, OREG.

Location.—In sec. 8, T. 37 S., R. 23 E., 4 miles below R. S. Allen's ranch; directly below mouth of McDowell Creek; about 10 miles southeast of Plush.

Records available.—April 8 to December 31, 1911; discontinued December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—Probably permanent; bed composed of gravel and stone.

Discharge measurements.—Made from the footbridge or by wading.

Accuracy.—A good rating curve has been constructed.

Cooperation.—Station maintained in cooperation with the Warner Lake Irrigation Co.

Discharge measurements of Twelvemile Creek near Plush, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Apr. 27	Davenport and Dubuis	2.35	35.9
May 5	John Dubuis	2.35	39.6
19	....do	1.97	20.0
July 26	....do	1.20	1.6

Daily gage height, in feet, of Twelvemile Creek near Plush, Oreg., for 1911.

[V. G. Allen, observer.]

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.0	2.5	1.9	.....	.....	.....	1.1	.....
2	.....	2.1	2.5	1.7	.....	.....	.....	.....	.....
3	.....	1.8	2.4	1.6	.....	.....	.....	.....	.....
4	.....	2.5	2.5	1.5	1.0	.....	1.1	.....	.....
5	.....	2.4	2.55	1.4	.....	.....	.....	.....	1.1
6	.....	2.3	2.6	1.4	.....	1.1	.....	.....	.....
7	.....	2.4	2.6	1.3	.....	.....	.....	.....	.....
8	2.0	2.2	2.75	1.3	.....	.....	.....	1.1	.....
9	1.8	2.2	2.7	1.25	1.0	.....	.....	.....	.....
10	2.0	2.3	2.6	1.3	.....	.....	.....	.....	.....
11	1.9	2.3	2.55	1.35	.....	.....	1.0	.....	.....
12	2.1	2.2	2.6	1.4	.....	.....	.....	.....	.....
13	1.9	2.2	2.5	1.3	.....	1.0	.....	.....	1.15
14	1.7	1.8	2.5	1.2	.....	.....	.....	1.2	.....
15	1.8	1.7	2.6	1.25	.....	.....	.....	.....	.....
16	1.8	1.7	2.65	.....	.....	.....	.....	.....	.....
17	1.7	1.9	2.6	1.2	.....	.....	.....	.....	.....
18	1.7	1.8	2.6	.....	.....	.....	1.0	.....	.....
19	1.8	1.75	2.5	1.3	.....	.....	.....	.....	.....
20	1.8	1.9	2.5	.....	.....	1.0	.....	.....	1.15
21	1.9	2.0	2.4	.....	.....	.....	.....	.....	.....
22	1.7	2.1	2.5	1.2	1.0	.....	.....	.....	.....
23	1.9	2.2	2.6	.....	.....	.....	.....	1.2	.....
24	1.9	2.2	2.4	1.2	.....	.....	.....	.....	.....
25	2.1	2.1	2.4	.....	.....	.....	1.1	.....	.....
26	2.0	2 2	2.2	.....	.....	.....	.....	.....	.....
27	2.3	2.3	2.0	1.2	.....	1.1	.....	.....	1.1
28	2.0	2.2	1.8	.....	.....	.....	.....	.....	.....
29	2.1	2.3	1.7	1.1	.....	.....	.....	1.05	.....
30	1.8	2.2	1.8	.....	1.0	.....	.....	.....	.....
31	.....	2.4	.....	1.05	.....	.....	.....	.....	.....

NOTE.—No record of effect of ice during November and December.

Daily discharge, in second-feet, of Twelvemile Creek near Plush, Oreg., for 1911.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		21	48	17				1.0	
2		25	48	10					
3		13	41	8					
4		48	48	6	.5		1.0		
5		41	52	4					1.0
6		35	56	4		1.0			
7		41	56	2.5					
8	21	30	70	2.5				1.0	
9	13	30	65	2.1	.5				
10	21	35	56	2.5					
11	17	35	52	3.2			.5		
12	25	30	56	4					
13	17	30	48	2.5		.5			1.4
14	10	13	48	1.7				1.7	
15	13	10	56	2.1					
16	13	10	60	1.9					
17	10	17	56	1.7					
18	10	13	56	2.1			.5		
19	13	12	48	2.5					
20	13	17	48	2.2		.5			1.4
1	17	21	41	1.9					
22	10	25	48	1.7	.5				
23	17	30	56	1.7				1.7	
24	17	30	41	1.7					
25	25	25	41	1.7			1.0		
26	21	30	30	1.7					
27	35	35	21	1.7		1.0			1.0
28	21	30	13	1.4					
29	25	35	10	1.0				.8	
30	13	30	13	.9	.5				
31		41		.8					

NOTE.—Discharge determined from well-defined rating curve. Discharge interpolated for days on which gage was not read. No correction made for possible effect of ice during December.

Monthly discharge of Twelvemile Creek near Plush, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
April 8–30	35	10	17.3	787	A.
May	48	10	27.0	1,660	A.
June	70	10	46.1	2,740	A.
July	17	.8	3.18	196	C.
August	.8	.5	.52	32	D.
September	1.0	.5	.71	42	D.
October	1.0	.5	.76	47	D.
November	1.7	.8	1.31	78	D.
December	1.4	.8	1.17	72	D.
The period				5,500	

SNYDER CREEK NEAR PLUSH, OREG.

Location.—In sec. 18, T. 36 S., R. 23 E., near the dam site about half a mile above the mouth of the stream, 8 miles from Plush.

Records available.—January 1 to December 31, 1911; discontinued December 31 1911.

Drainage area.—Not measured.

Gage.—Two gages have been used and the relationship partially determined from simultaneous readings.

Channel.—Probably permanent; bed composed of rock and gravel.

Discharge measurements.—Made by wading; high water measurements could not be obtained as the stream is very flashy.

Winter flow.—Relation between gage height and discharge affected by ice during the winter period.

Cooperation.—Gage heights during part of 1911 furnished by Warner Lake Irrigation Co.

The greater portion of the run-off from the basin passes off within a short time during the first warm weather of the spring, generally some time between January and March.

The following discharge measurement was made by Davenport and Dubuis:

April 27, 1911: Gage height, 1.85 feet; discharge, 22.8 second-feet.

Estimates of daily and monthly discharge are withheld for the present.

Daily gage height, in feet, of Snyder Creek near Plush, Oreg., for 1911.

[C. A. Chalstrand, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.0	0.1	.....	1.6	1.75	1.85	0.9	.....	.....	.....	.....	.....
2	.....	.0	.....	1.3	1.55	1.7	.9	.....	.....	.....	.....	.....
3	.....	.....	0.5	1.1	1.85	1.5	.75	.....	.....	.....	.....	.....
4	.....	.....	.....	1.0	1.85	1.65	.75	.....	.....	.....	.....	0.8
5	.0	.....	.5	.8	2.0	1.45	.6	.....	.....	.....	.....	.....
6	.....	.....	.7	.....	1.55	1.5	.6	.....	.....	.....	.....	.....
7	.....	.....	.....	.7	1.5	1.4	.5	.....	.....	.....	0.7	.....
8	.1	.....	.7	2.0	1.6	1.45	.....	.....	.....	.....	.....	.....
9	.0	.....	.....	1.9	1.5	1.3	.35	.....	.....	.....	.....	.....
10	.....	.....	.7	1.8	1.35	1.35	.....	.....	.....	.....	.....	.....
11	.....	.....	.7	1.75	1.5	1.3	.2	.....	.....	.....	.....	.8
12	.....	.....	.9	1.65	1.55	1.4	.....	.....	.....	.....	.6	.....
13	.....	.....	.....	1.6	1.4	1.2	.05	.....	.....	.....	.....	.....
14	.....	.....	.9	1.75	1.35	1.25	.....	.....	.....	.....	.....	.....
15	.0	.....	.9	1.9	1.35	1.25	.0	.....	.....	.....	.....	.....
16	.....	.....	1.0	1.8	1.5	1.1	.....	.....	.....	.....	.....	.....
17	.....	.3	1.0	1.85	1.55	1.0	.0	.....	.....	.....	.....	.....
18	.....	.....	1.4	1.8	1.6	1.1	.....	.....	.....	.....	.....	.8
19	.....	.3	1.7	1.7	1.4	1.0	.0	.....	.....	.....	.....	.....
20	.....	.....	2.0	1.6	1.45	1.05	.....	.....	.....	.....	.7	.....
21	.....	.....	2.0	1.7	1.5	.95	.0	.....	.....	.....	.....	.....
22	.....	.....	3.25	.....	1.5	1.0	.....	.....	.....	.....	.....	.....
23	.....	.....	2.5	2.2	1.5	.9	.....	.....	.....	.....	.....	.....
24	.....	.....	1.8	2.1	1.55	.9	.....	.....	.....	.....	.....	.....
25	.0	.3	1.8	2.3	1.35	.9	.....	.....	.....	.....	.....	.8
26	.....	.....	1.8	2.15	1.65	.95	.....	.....	.....	.....	.....	.....
27	.....	.....	1.7	1.95	1.7	.95	.....	.....	.....	.....	.8	.....
28	.....	.....	1.6	1.75	1.6	1.0	.....	.....	.....	.....	.....	.....
29	.9	.....	1.6	1.7	1.5	.95	.....	.....	.....	.....	.....	.....
30	1.3	.....	1.6	1.7	1.3	1.0	.....	.....	.....	0.8	.....	.....
31	.4	.....	1.6	.....	1.5	.....	.....	.....	.....	.....	.....	.....

NOTE.—Gage heights Jan. 1 to Apr. 7 and Oct. 30 to Dec. 25 read from Warner Lake Irrigation Co.'s gage. Gage heights Apr. 8 to July 21 read from United States Geological Survey gage. Datum and location of the two gages different. Gage heights affected by ice Jan. 1 to about Mar. 15 and Nov. 27 to Dec. 31. Water standing in pools about July 9 to 21; creek dry July 23 probably to the last of October.

ABERT LAKE BASIN.

CHEWAUCAN RIVER AT PAISLEY, OREG.

Location.—Half a mile above the town of Paisley, in the SE. ¼ sec. 23, T. 33 S., R. 18 E.

Records available.—January 4, 1905, to December 31, 1907; January 17, 1909, to December 31, 1911.

Drainage area.—272 square miles.

Gage.—Vertical staff.

Channel.—Probably permanent; bed composed of clean gravel; banks subject to some overflow at stages above gage height 8 feet.

Discharge measurements.—Made from cable 60 feet below gage or by wading.

Winter flow.—Affected by ice.

Diversions.—The station is above all diversions except George Conn's irrigation ditch, which heads about 2½ miles above the gage on the left bank and diverts water around the station. Conn's mill ditch diverts water from the left bank about 250 feet below the gage, where a low timber dam has been constructed. The current is fairly swift between the gage and the dam and practically no backwater was noticeable prior to 1910. During 1910 there was probably a little backwater. During the low water of 1911, flash boards were used on the dam, producing backwater at the gage. The Brattain ditch diverts water about 300 feet below the gage on the right bank; it follows the foothills for many miles down the river and supplies water for use in irrigating land immediately around Paisley and large areas of hay land in Chewaucan Marsh.

Storage.—It has been proposed to store the water of Chewaucan River at a point 20 miles upstream from Paisley to provide for the reclamation of a tract of 12,000 acres northeast of Paisley under the terms of the Carey Act. The development of this project, however, has been hindered by water-right claims of the owners of hay lands in Chewaucan Marsh. These lands have been flooded during the spring and winter to a depth of several feet and, as all the water is claimed for this flooding, development work can not proceed until water rights have been adjudicated.

Discharge measurements of Chewaucan River at Paisley, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 17[a]	R. W. Davenport	3.96	51.3
May 7	do	6.20	618

[a] River frozen over except channel 6 to 12 inches wide in center. Ice 3 to 8 inches thick. Dam below gage had been removed for winter.

Daily gage height, in feet, of Chewaucan River at Paisley, Oreg., for 1911.

[Lula Banister, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.8	4.4	4.3	6.7	6.5	6.8	4.8	3.9	3.9	4.0	4.0	3.9
2	3.8	4.4	4.3	6.6	6.5	6.6	4.8	4.0	3.9	4.0	4.0	4.0
3	.....	4.2	4.3	6.4	6.6	6.6	4.8	4.0	3.9	4.0	4.0	3.9
4	3.8	4.3	4.5	6.4	6.7	6.5	4.6	4.0	3.9	4.0	4.0	3.9
5	3.8	.....	4.8	6.3	6.8	6.4	4.5	3.9	4.0	4.0	.....	3.9
6	3.8	4.4	4.5	6.3	6.3	6.4	4.5	3.9	4.1	4.0	4.0	.....
7	3.8	4.4	4.5	6.3	6.0	6.4	4.3	3.9	4.0	4.0	4.0	3.9
8	3.9	4.4	4.5	6.3	5.9	6.4	4.1	3.9	3.9	4.0	4.0	3.9
9	3.9	4.4	4.5	6.0	5.9	6.3	4.1	3.9	3.9	4.0	4.0	3.9
10	.....	4.4	4.4	5.8	5.8	6.2	.....	3.9	3.9	4.0	4.0	3.9
11	3.9	4.4	4.4	5.6	5.8	6.2	4.1	3.9	4.0	4.0	3.9	3.9
12	4.0	4.4	4.5	5.3	6.1	6.2	4.1	3.9	4.0	4.0	3.9	4.0
13	4.1	4.3	4.6	4.9	5.9	6.2	4.1	3.9	4.0	4.0	4.0	4.0
14	4.1	4.3	4.6	4.9	5.8	6.2	4.1	3.9	4.0	.....	4.0	4.2
15	4.1	4.4	4.6	5.1	5.9	6.4	4.1	3.9	4.0	4.0	4.0	4.0
16	4.1	4.5	4.6	5.2	6.0	6.0	4.1	3.9	3.9	4.0	4.0	3.9
17	4.0	4.3	4.5	5.0	6.1	6.0	4.1	3.9	4.0	4.0	4.0	3.9
18	3.9	4.4	4.5	4.9	6.2	5.9	4.1	3.9	3.9	4.0	4.0	3.9
19	3.9	4.4	4.8	4.8	6.2	5.7	4.1	3.9	3.9	3.9	.....	4.2
20	4.1	4.4	4.8	4.7	6.3	5.5	.....	3.9	3.9	3.9	4.0	4.5

Daily gage height, in feet, of Chewaucan River at Paisley, Oreg., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
21	.....	4.4	5.4	4.9	6.3	5.3	4.0	3.9	3.9	3.9	4.0	4.8
22	4.4	4.5	6.1	5.0	6.2	5.0	4.0	3.9	.....	3.9	4.0	4.8
23	4.5	4.4	6.3	5.4	6.2	4.9	4.0	3.9	3.9	4.0	4.0	4.8
24	4.5	4.4	6.0	5.9	6.0	4.8	4.0	3.9	3.9	4.0	4.0	4.6
25	4.4	4.4	5.5	6.4	5.9	4.8	4.0	3.9	4.0	4.0	4.0	4.5
26	4.3	4.4	5.4	6.3	5.8	4.8	4.0	3.9	4.1	4.0	3.9	4.5
27	4.3	4.3	5.3	6.5	5.9	5.0	.....	3.9	4.0	4.1	3.9	4.5
28	4.3	4.3	5.3	6.6	6.0	4.8	3.9	3.9	4.0	4.0	3.9	4.5
29	4.3	.....	5.4	6.1	6.2	4.9	3.8	3.9	4.0	4.0	3.9	4.5
30	4.3	.....	5.6	6.1	6.4	4.9	3.8	3.9	4.0	4.0	3.9	4.4
31	4.3	.....	5.8	.....	6.4	.....	3.8	3.9	.....	4.0	.....	4.4

NOTE.—Gage heights probably affected by ice Jan. 1 to about Mar. 11 and about Dec. 14 to 31. Gage heights affected by backwater from temporary flashboards placed on the dam below from about Aug. 1 to about Nov. 10.

Daily discharge, in second-feet, of Chewaucan River at Paisley, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	932	818	992	197	35	35	44	44	54
2	.....	874	818	874	197	44	35	44	44	65
3	.....	764	874	874	197	44	35	44	44	54
4	.....	764	932	818	156	44	35	44	44	54
5	.....	712	992	764	137	35	44	44	44	54
6	.....	712	712	764	137	35	54	44	44	54
7	.....	712	573	764	104	35	44	44	44	54
8	.....	712	533	764	77	35	35	44	44	54
9	.....	573	533	712	77	35	35	44	44	54
10	.....	495	495	662	77	35	35	44	44	54
11	.....	421	495	662	77	35	44	44	54	54
12	137	325	616	662	77	35	44	44	54	65
13	156	220	533	362	77	35	44	44	65	65
14	156	220	495	662	77	35	44	44	65	.....
15	156	268	533	764	77	35	44	44	65	.....
16	156	295	573	573	77	35	35	44	65	.....
17	137	243	616	573	77	35	44	44	65	.....
18	137	220	662	533	77	35	35	44	65	.....
19	197	197	662	457	77	35	35	35	65	.....
20	197	176	712	387	71	35	35	35	65	.....
21	355	220	712	325	65	35	35	35	65	.....
22	616	243	662	243	65	35	35	35	65	.....
23	712	355	662	220	65	35	35	44	65	.....
24	573	533	573	197	65	35	35	44	65	.....
25	387	764	533	197	65	35	44	44	65	.....
26	355	712	495	197	65	35	54	44	54	.....
27	325	818	533	243	60	35	44	54	54	.....
28	325	874	573	197	54	35	44	44	54	.....
29	355	616	662	220	44	35	44	44	54	.....
30	421	616	764	220	44	35	44	44	54	.....
31	495	.....	764	.....	44	35	.....	44	.....	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge Aug. 1 to Nov. 10 obtained by applying open-channel rating curve after reducing each gage height 0.2 foot (assumed as the effect of backwater). Discharge interpolated for days on which gage was not read.

Monthly discharge of Chewaucan River at Paisley, Oreg., for 1911.

[Drainage area, 272 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	.....	.....	40	0.147	0.17	2,460	D.
February	.....	.....	30	.110	.11	1,670	D.
March	712	.....	233	.857	.99	14,300	B.
April	932	176	520	1.91	2.13	30,900	A.
May	992	495	649	2.39	2.76	39,900	A.
June	992	197	539	1.98	2.21	32,100	A.
July	197	44	88.9	.327	.38	5,470	B.
August	44	35	35.9	.132	.15	2,210	D.
September	54	35	40.2	.148	.17	2,390	D.
October	54	35	43.2	.159	.18	2,660	D.
November	65	44	55.4	.204	.23	3,300	C.
December	.....	.....	47.0	.173	.20	2,890	D.
The year	992	.....	194	.713	9.68	140,000	

NOTE.—Discharge Jan. 1 to Mar. 11, and Dec. 14–31, estimated, because of ice, from climatologic records. Mean discharge Mar. 1 to 11, estimated, 80 second-feet. Mean discharge Dec. 14 to 31, estimated, 40 second-feet.

SILVER LAKE BASIN.

SILVER CREEK NEAR SILVER LAKE, OREG.

Location.—In sec. 28, T. 28 S., R. 14 E., 1½ miles southwest of Silver Lake post office.

Records available.—December 29, 1904, to March 31, 1907; January 11, 1909, to December 31, 1911.

Drainage area.—221 square miles.

Gage.—Inclined staff on the right bank. In April, 1910, the gage was found to have been raised from the true position and some of the 1909 gage readings are therefore subject to error.

Channel.—Fairly permanent; bed composed of rocks and gravel.

Discharge measurements.—Made from a cable near the gage, or by wading.

Storage.—As the normal summer flow of nearly all the streams in this region is appropriated for present irrigation requirements, any additional development will require storage. Several fairly good sites are available on Silver Creek above areas of agricultural land that could easily be irrigated form stored waters.

Accuracy.—Conditions favorable for good results. Records believed to be reliable.

Discharge measurements of Silver Creek near Silver Lake, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 14[a]	R. W. Davenport	0.90	13.9
May 9	.....do	2.73	175

[a] River frozen over. Ice 6 to 8 inches thick.

Daily gage height, in feet, of Silver Creek near Silver Lake, Oreg., for 1911.

[Jas. H. Gowdy, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.60	0.75	1.05	4.80	2.90	2.10	1.15	0.90	0.86	0.95	0.82	0.82
2	.65	.75	1.05	5.20	2.80	1.90	1.10	.90	.86	.95	.82	.82
3	.60	.75	1.20	4.60	3.00	1.80	1.10	.90	.82	.95	.82	.82
4	.60	.70	1.20	4.10	3.50	1.70	1.05	.90	.86	.90	.82	.82
5	.70	.70	1.30	3.30	3.90	1.60	1.05	.90	.86	.90	.82	.82
6	.65	.70	1.05	3.40	3.80	1.55	1.00	.90	.86	.90	.82	.82
7	.60	.80	1.00	3.90	3.70	1.50	1.00	.90	.86	.90	.82	.82
8	.60	.90	.95	4.20	3.60	1.40	1.00	.90	.86	.90	.82	.82
9	.60	.90	.95	4.10	3.10	1.40	1.00	.90	.90	.90	.82	.82
10	.65	1.00	.95	3.90	2.50	1.40	1.00	.90	.90	.90	.82	.82
11	.70	1.00	1.00	2.35	2.50	1.35	1.00	.90	.90	.90	.82	.82
12	.75	1.20	.95	2.15	2.70	1.35	1.00	.90	.90	.90	.82	.82
13	.80	1.10	1.00	2.35	2.60	1.35	1.00	.90	.90	.90	.82	.82
14	.85	1.20	1.05	2.60	2.45	1.30	.95	.90	.90	.90	.82	.82
15	.80	1.00	1.10	2.60	2.35	1.30	.95	.90	.90	.90	.86	.86
16	.75	.80	1.10	2.70	2.35	1.30	.95	.90	.90	.90	.86	.86
17	.70	.70	1.30	3.10	2.45	1.20	.95	.90	.86	.86	.90	.86
18	.75	.70	1.30	3.10	2.45	1.20	.95	.90	.86	.86	.90	.86
19	.80	.70	1.30	2.60	2.45	1.20	.90	.90	.86	.86	.90	.90
20	.80	.70	1.50	2.60	2.45	1.20	.90	.90	.86	.82	.90	.90
21	.70	.65	1.68	3.10	2.35	1.15	.90	.86	.86	.82	.90	.90
22	.70	.65	2.00	3.20	2.35	1.15	.90	.86	.86	.82	.90	.90
23	.75	.70	2.25	3.50	2.45	1.20	.90	.86	.86	.82	.90	.90
24	.85	.70	2.70	3.80	2.45	1.20	.90	.86	.90	.82	.90	.90
25	.85	.80	2.80	3.90	2.45	1.20	.90	.86	.90	.82	.90	.90
26	.90	.80	2.50	3.90	2.35	1.20	.90	.86	.95	.82	.90	.90
27	.85	.85	2.50	3.80	2.25	1.20	.86	.86	1.00	.82	.86	.90
28	.80	.85	2.60	3.50	2.20	1.15	.86	.86	.95	.82	.86	.90
29	.80	.....	3.10	3.00	2.35	1.20	.86	.86	.90	.82	.86	.90
30	.85	.....	3.90	2.90	2.35	1.20	.90	.86	.90	.82	.82	.90
31	.85	.....	4.10	.....	2.35	.....	.90	.86	.....	.82	.....	.95

NOTE.—Ice at station Jan. 1 to about Mar. 10 and about Nov. 27 to Dec. 31.

Daily discharge, in second-feet, of Silver Creek near Silver Lake, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	484	199	117	38	24	22	26	20	20
2	.....	576	188	98	35	24	22	26	20	20
3	.....	440	210	89	35	24	20	26	20	20
4	.....	352	269	80	32	24	22	24	20	20
5	.....	245	323	72	32	24	22	24	20	20
6	.....	257	309	68	29	24	22	24	20	20
7	.....	323	295	64	29	24	22	24	20	20
8	.....	368	282	56	29	24	22	24	20	20
9	.....	352	221	56	29	24	24	24	20	20
10	.....	323	157	56	29	24	24	24	20	20
11	29	142	157	52	29	24	24	24	20	20
12	26	122	177	52	29	24	24	24	20	20
13	29	142	167	52	29	24	24	24	20	20
14	32	167	152	48	26	24	24	24	20	20
15	35	167	142	48	26	24	24	24	22	.....
16	35	177	142	48	26	24	24	24	22	.....
17	48	221	152	41	26	24	22	22	24	.....
18	48	221	152	41	26	24	22	22	24	.....
19	48	167	152	41	24	24	22	22	24	.....
20	64	167	152	41	24	24	22	22	24	.....
21	78	221	142	38	24	22	22	20	24	.....
22	107	233	142	38	24	22	22	20	24	.....
23	132	269	152	41	24	22	22	20	24	.....
24	177	309	152	41	24	22	24	20	24	.....
25	188	323	152	41	24	22	24	20	24	.....
26	157	323	142	41	24	22	26	20	24	.....
27	157	309	132	41	22	22	29	20	22	.....
28	167	269	127	38	22	22	26	20	22	.....
29	221	210	142	41	22	22	24	20	22	.....
30	323	199	142	41	24	22	24	20	20	.....
31	352	.....	142	.....	24	22	.....	20	.....	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge assumed unaffected by ice Nov. 27 to Dec. 14.

Monthly discharge of Silver Creek near Silver Lake, Oreg., for 1911.

[Drainage area, 221 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	.....	.....	13	0.059	0.07	799	D.
February	.....	.....	12	.054	.06	666	D.
March	352	.....	85.6	.387	.45	5,260	C.
April	576	122	269	1.22	1.36	16,000	B.
May	323	127	180	.814	.94	11,100	B.
June	117	38	54.0	.244	.27	3,210	B.
July	38	22	27.1	.123	.14	1,670	B.
August	24	22	23.3	.105	.12	1,430	C.
September	29	20	23.2	.105	.12	1,370	C.
October	26	20	22.5	.102	.12	1,380	C.
November	24	20	21.7	.098	.11	1,290	C.
December	.....	.....	17.8	.080	.09	1,090	C.
The year	576	.....	62.5	.283	3.85	45,300	

NOTE.—Discharge Jan. 1 to Mar. 10 and Dec. 15 to 31 estimated, because of ice, from climatologic records and from a consideration of the discharge measurement Jan. 14. Mean discharge Mar. 1 to Mar. 10 estimated 20 second-feet. Mean discharge Dec. 15 to 31 estimated 16 second-feet.

BRIDGE CREEK NEAR SILVER LAKE, OREG.

Location.—At the county bridge in the SW. ¼ sec. 20, T. 28 S., R. 14 E., 2 miles west of Silverlake, Oreg.

Records available.—January 21, 1905, to July 21, 1906; September 24, 1910, to September 2, 1911; fragmentary.

Drainage area.—45 square miles.

Gage.—Vertical staff which was set at the same datum as that of the gage used in 1905–6.

Channel.—Somewhat shifting; bed composed of sand and gravel.

Discharge measurements.—Made by wading.

Cooperation.—Station maintained in cooperation with United States Forest Service.

Records of flow at this station show the total run-off from the drainage area. Estimates are withheld until more data are available.

Discharge measurements of Bridge Creek near Silver Lake, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 14[a]	R. W. Davenport	1.95	1.10
May 9[b]	.....do	2.58	17.0

[a] River frozen over. Ice 6 inches thick. Discharge estimated.
[b] About 0.6 second-feet being diverted just above gage

Daily gage height, in feet, of Bridge Creek near Silver Lake, Oreg., for 1911.

[W. J. Archer, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1				2.8					
2							2.3		1.7
3									
4		1.8	2.5						
5									
6									
7	1.8								
8									
9					2.58		2.0		
10									
11		1.8							
12									
13									
14	1.95								
15									
16									
17									
18		2.4							
19									
20									
21	2.0								
22							1.65		
23									
24									
25		2.5	2.0						
26									
27									
28	1.8								
29									
30							1.6		
31									

NOTE.—Ice at station during January, February, and first part of March.
Observer notes for latter part of July that about 40 inches of water was being diverted above the gage.

BEAR (BUCK) CREEK NEAR SILVER LAKE, OREG.

Location.—At the county highway bridge in sec. 17, T. 27 S., R. 14 E., 3 miles southwest of Silver Lake post office.

Records available.—January 21, 1905, to July 21, 1906; January 11, 1909, to September 3, 1911; fragmentary.

Drainage area.—77 square miles.

Gage.—An inclined staff.

Channel.—Probably shifts; bed composed of sand and gravel.

Discharge measurements.—Made by wading.

Winter flow.—Affected by ice.

Diversions.—A dam above the station and several brush dams put in each year below the station are used to divert water in small ditches or for flooding hay lands.

Accuracy.—As gage heights are affected by backwater from the temporary dams below, reliable estimates of discharge can not be made. Approximate estimates for 1905 to 1910 have been obtained by correcting gage heights for effect of backwater. Observations for 1911 are too fragmentary to be used as a basis for estimates of daily or monthly discharge.

The following discharge measurement was made by R. W. Davenport:
January 14, 1911: Gage height, 4.18[1]; discharge, 5.4 second-feet.

[1] Ice at the gage 4 inches thick.

Daily gage height, in feet, of Bear Creek near Silver Lake, Oreg., for 1911.

[W. J. Archer, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1				6.0					
2							5.8		
3									3.0
4		4.1	4.5						
5									
6									
7	4.2							3.9	
8							5.6		
9									
10									
11		4.1							
12									
13									
14	4.2								
15									
16									
17									
18		4.4							
19									
20									
21	4.2								
22							5.6		
23									
24									
25		4.4	4.5						
26									
27									
28	4.1								
29									
30							4.1		
31									

NOTE.—Ice at station during January, February, and first part of March. May 10, 1911, gage found drowned out by backwater from an irrigation dam; it was moved upstream about three-quarters of a mile. Gage heights prior to May 10 not comparable with those subsequent to that date.

MALHEUR AND HARNEY LAKES BASIN.

MALHEUR LAKE AT NARROWS, OREG.

Location.—In sec. 26, T. 26 S., R. 31 E., at the highway bridge across the narrow channel connecting Malheur and Harney Lakes, a few hundred feet from Narrows postoffice.

Records available.—March 14, 1903, to July 21, 1906; March 22, 1911, to September 9, 1911.

Gage.—Vertical staff on highway bridge; read once a week.

Channel.—Mud supporting a dense growth of tules and other vegetation, goes dry nearly every summer.

The station was established to determine fluctuations of the water elevation in Malheur Lake, which is several feet above the level of Harney Lake, but the gage heights indicate the outflow from Malheur Lake rather than the elevation of the water surface, although the two factors are probably related. The connecting channel was dry during the latter part of 1911 and there was no water within several miles of the gage. The relation between the gage readings at the Narrows and the elevation of Malheur Lake has not been determined.

Daily gage height, in feet, of Malheur Lake at Narrows, Oreg., for 1911.

[R. L. Hass, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	.....	4.3	4.25	4.0	.....	.....	16	.....	.....	.....	.....	.....	.....	.....
2	.....	3.45	.....	.....	.....	3.6	1.6	17	.....	4.15	.....	.....	.....	.....	.....
3	.....	.....	4.35	.....	.....	.....	.....	18	.....	.....	4.3	4.15	.....	.....	.....
4	.....	3.45	.....	4.25	.....	.....	.....	19	.....	.....	.....	.....	.....	2.8	.....
5	.....	.....	.....	.....	.....	3.4	.....	20	.....	4.2	.....	.....	.....	.....	.....
6	.....	3.55	4.35	4.2	.....	.....	.....	21	.....	.....	4.3	4.15	.....	.....	.....
7	.....	.....	.....	.....	.....	.....	.....	22	3.25	.....	.....	.....	4.0	.....	.....
8	.....	.....	.....	.....	4.0	.....	.....	23	.....	4.25	.....	.....	.....	.....	.....
9	.....	4.0	4.35	4.2	.....	.....	1.1	24	.....	.....	4.3	4.1	.....	.....	.....
10	.....	.....	.....	.....	.....	.....	.....	25	3.35	.....	.....	.....	.....	.....	.....
11	.....	4.0	.....	.....	.....	.....	.....	26	.....	4.25	.....	.....	.....	2.75	.....
12	.....	.....	4.35	4.2	.....	3.1	.....	27	.....	.....	4.35	4.05	.....	.....	.....
13	.....	.....	.....	.....	.....	.....	.....	28	3.35	.....	.....	.....	.....	.....	.....
14	.....	4.1	.....	.....	.....	.....	.....	29	.....	4.3	.....	.....	3.8	.....	.....
15	.....	.....	4.35	4.2	4.0	.....	.....	30	.....	.....	4.35	4.05	.....	.....	.....
								31	3.35	.....	.....	.....	.....	.....	.....

NOTE.—Channel dry Sept. 16.

SILVIES RIVER NEAR SILVIES, OREG.

Location.—At the site of a proposed dam about 3 miles southwest of Silvies, Oreg., in sec. 14, T. 20 S., R. 31 E., three-fourths of a mile below Trout Creek and 1½ miles west of the Burns-Canyon City road.

Records available.—May 9, 1903, to December 31, 1904; January 1, 1909, to June 30, 1911, when station was discontinued.

Drainage area.—450 square miles.

Gage.—An inclined staff.

Channel.—Shifts somewhat at flood stages; bed composed of clean gravel; banks covered with heavy brush.

Discharge measurements.—Made from cable or by wading.

Winter flow.—Affected by ice.

Storage.—A dam constructed at the site of the station will impound all the run-off from the drainage basin above it and the water so stored could be diverted from this stream to irrigate lands in Harney Valley. The project was at one time under investigation by United States Reclamation Service but has since been taken up by the Silver Valley Irrigation Co.

Accuracy.—Conditions at this station are not favorable for accurate determinations of discharge owing to changes in conditions of flow. The relation between gage height and discharge is materially affected by ice during the winter, but allowance for this condition has been made.

Cooperation.—During 1911 station was maintained in cooperation with the Silver Valley Irrigation Co.

Discharge measurements of Silvies River near Silvies, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 23	Rhea Luper	5.36	292
24	....do	4.90	227
24	....do	4.85	216
25	....do	4.38	170
25	....do	4.40	172
27	....do	4.00	138
28	....do	4.60	195
29	....do	4.64	206
30	....do	5.09	247
31	....do	5.45	281
Apr. 2	....do	6.55	414
3	....do	7.06	487
4	....do	7.26	500
5	....do	6.58	422
7	....do	5.50	283
8	....do	5.70	304
9	....do	6.08	376
11	....do	5.76	328
13	....do	4.95	238
14	....do	4.75	214
17	....do	4.91	234
18	....do	5.02	241
July 28	R. W. Davenport	1.97	2.53

Daily gage height, in feet, and discharge, in second-feet, of Silvies River near Silvies, Oreg., for 1911.

[David Craddock, observer.]

Day.	January.		February.		March.		April.		May.		June.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	2.75						6.1	364	4.5	185	3.15	54
2			2.75				6.5	412	4.4	174	3.1	50
3							7.2	504	4.45	180	3.0	43
4			2.75		2.75		7.4	532	4.5	185	3.2	58
5							6.8	451	4.5	185	3.2	58
6							5.9	340	4.45	180	3.25	62
7							5.6	306	4.45	180	3.25	62
8	2.75						5.7	317	4.0	134	3.3	66
9							6.1	364	4.3	164	3.35	70
10	2.75						6.6	425	4.3	164	3.3	66
11			2.75		2.75	27	5.9	340	4.25	159	3.25	62
12						31	5.4	284	4.2	154	3.3	66
13						35	5.1	251	4.15	149	3.3	66
14						39	4.8	218	4.2	154	3.2	58
15					3.0	43	4.9	229	4.2	154	3.45	80
16					3.1	50	4.8	218	4.0	134	3.5	84
17			2.75		4.25	159	4.9	229	4.1	144	3.45	80
18					4.15	149	5.0	240	4.5	185	3.2	58
19					4.2	154	4.8	218	4.6	196	3.15	54
20	2.75				5.4	284	4.6	196	4.2	154	2.9	36
21					5.0	240	4.6	196	4.4	174	2.8	30
22					5.0	240	4.6	196	4.1	144	2.65	22
23					5.3	273	4.8	218	4.0	134	2.5	15
24			2.75		4.6	196	4.8	218	3.8	114	2.45	14
25					4.2	154	4.8	218	3.75	109	2.45	14
26					3.9	124	4.9	229	3.6	94	2.45	14
27					4.25	159	4.9	229	3.5	84	2.45	14
28	2.75				4.2	154	4.8	218	3.4	75	2.5	15
29					4.4	174	4.8	218	3.3	66	2.55	17
30					5.0	240	4.7	207	3.25	62	2.6	19
31					5.4	284			3.2	58		

NOTE.—Gage heights affected by ice Jan. 1 to Mar. 10. Discharge determined from a rating curve well defined above 100 second-feet. Discharge interpolated Mar. 12–14.

Monthly discharge of Silvies River at Silvies, Oreg., for 1911.

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January			12	0.026	0.03	738	D.
February			13	.029	.03	722	D.
March	284		108	.240	.28	6,640	C.
April	532	196	286	.636	.71	17,000	A.
May	196	58	143	.318	.37	8,790	A.
June	84	14	46.9	.104	.12	2,790	B.
The period						36,700	

NOTE.—Discharge Jan. 1 to Mar. 10 estimated, because of ice, from climatologic records and records of discharge of Silvies at Burns, Oreg. Mean discharge Mar. 1 to 10 estimated 15 second-feet.

SILVIES RIVER NEAR BURNS, OREG.

Location.—10 feet below a wagon bridge near Parker's house, in sec. 7, T. 22 S., R. 30 E., 10 miles north of Burns.

Records available.—May 10, 1903, to July 24, 1906; December 14, 1908, to December 31, 1911.

Drainage area.—865 square miles.

Gages.—An inclined and vertical staff was used during 1911.

Channel.—May shift slightly; bed composed of gravel; stream flows through a flat alluvial bottom between banks covered with a dense growth of willows and underbrush. Above a gage height of 13 feet the stream overflows a wide area.

Discharge measurements.—Made from a cable at Lampshire's ranch 1 mile above the gage.

Winter flow.—Ice effect slight.

Utilization.—The water of Silvies River is largely used for the flood irrigation of hay lands in Harney Valley. As even the flood discharge is so used, any irrigation project that would require the diversion of the water would involve the settlement of accrued water rights.

Accuracy.—Conditions not favorable for accurate determination of discharge.

Cooperation.—Station maintained in 1911 in cooperation with the Silver Valley Irrigation Co.

Discharge measurements of Silvies River near Burns, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Jan. 15	Cooper and Dodge	2.70	32.9
Mar. 23	M. V. Dodge	9.29	601
24	do	10.38	723
27	do	7.15	411
28	do	7.78	487
30	do	9.56	613
31	do	10.28	700
Apr. 1	do	10.50	762
1	do	11.08	815
2	do	11.50	830
4	do	11.93	910
5	do	12.10	910
Aug. 1	R. W. Davenport	2.36	12.0
Dec. 3[a]	L. Crandall	2.42	17.5

[a] Some shore ice, but gage height probably not seriously affected.

Daily gage height, in feet, of Silvies River near Burns, Oreg., for 1911.

[E. P. Sylvester, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.60	2.60	2.70	10.40	6.60	3.40	2.63	2.38	2.25	.....	2.50	.....
2	2.60	2.60	2.70	11.40	5.20	3.30	2.63	2.38	2.25	.....	.....	.....
3	2.60	2.60	2.70	11.60	6.40	3.10	2.63	2.37	2.25	.....	.....	2.42
4	2.60	2.60	2.70	11.90	6.20	3.37	2.63	2.36	2.25	2.40	.....	.....
5	2.60	2.60	2.70	12.10	6.10	3.00	2.63	2.34	2.25	.....	.....	.....
6	2.60	2.60	2.70	11.60	6.20	3.00	2.60	2.33	2.25	.....	.....	2.55
7	2.60	2.60	2.80	10.30	5.80	3.05	2.60	2.31	2.27	.....	.....	.....
8	2.60	2.60	2.80	9.40	5.50	3.20	2.58	2.30	2.28	.....	2.55	.....
9	2.60	2.60	2.80	9.10	5.20	3.20	2.58	2.30	2.28	.....	.....	.....
10	2.65	2.60	2.80	9.40	5.10	3.25	2.55	2.30	2.28	.....	.....	.....
11	2.65	2.65	2.70	9.80	5.20	3.00	2.55	2.30	2.29	2.40	.....	.....
12	2.65	2.65	2.70	9.50	5.20	3.00	2.55	2.30	2.29	.....	.....	.....
13	2.65	2.70	2.75	8.50	5.10	2.90	2.53	2.30	2.30	.....	.....	2.50
14	2.70	2.70	2.80	7.50	5.20	2.83	2.53	2.29	2.30	.....	.....	.....
15	2.70	2.70	2.90	7.20	4.00	2.80	2.52	2.29	.....	.....	2.66	.....
16	2.65	2.70	3.00	7.00	4.50	2.75	2.52	2.28	.....	.....	.....	.....
17	2.60	2.70	3.20	6.90	4.50	2.90	2.50	2.27	.....	.....	.....	.....
18	2.60	2.70	3.50	7.20	4.80	2.95	2.50	2.27	.....	2.45	.....	.....
19	2.60	2.70	3.90	7.40	5.30	2.90	2.50	2.26	.....	.....	.....	.....
20	2.60	2.70	4.50	7.10	5.80	2.80	2.47	2.25	2.30	.....	.....	2.50
21	2.60	2.70	5.30	6.90	5.20	2.80	2.47	2.25	.....	.....	.....	.....
22	2.60	2.70	6.70	7.00	5.10	2.70	2.47	2.25	.....	.....	2.63	.....
23	2.60	2.70	9.00	6.90	4.90	2.65	2.45	2.25	.....	.....	.....	.....
24	2.60	2.70	10.40	7.40	4.50	2.58	2.43	2.25	.....	.....	.....	.....
25	2.60	2.70	9.50	7.60	4.40	2.58	2.43	2.24	.....	2.50	.....	.....
26	2.60	2.70	7.80	7.50	4.20	2.59	2.43	2.24	.....	.....	.....	.....
27	2.60	2.70	6.70	7.50	4.20	2.60	2.42	2.24	2.33	.....	.....	2.40
28	2.60	2.70	7.20	7.60	4.00	2.62	2.42	2.24	.....	.....	.....	.....
29	2.60	.....	8.30	7.30	3.90	2.62	2.41	2.24	.....	.....	2.63	.....
30	2.60	.....	9.40	7.00	3.65	2.63	2.40	2.23	.....	.....	.....	.....
31	2.60	.....	10.00	.....	3.17	.....	2.40	2.23	.....	.....	.....	.....

NOTE.—Relation of gage height to discharge probably not affected by ice. Gage heights probably affected by ice during January, February, early part of March, and latter part of December.

Daily discharge, in second-feet, of Silvies River near Burns, Oreg., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	28	28	35	713	358	90	30	13	6	12	21	22
2	28	28	35	827	234	82	30	13	6	13	21	18
3	28	28	35	851	340	66	30	12	6	13	21	15
4	28	28	35	887	322	88	30	12	6	14	22	18
5	28	28	35	914	313	58	30	10	6	14	22	21
6	28	28	35	851	322	58	28	10	6	14	23	24
7	28	28	42	702	286	62	28	9	6	14	23	24
8	28	28	42	610	259	74	27	8	7	14	24	23
9	28	28	42	583	234	74	27	8	7	14	24	23
10	32	28	42	610	226	78	24	8	7	14	25	22
11	32	32	35	650	234	58	24	8	8	14	25	22
12	32	32	35	620	234	58	24	8	8	15	26	21
13	32	35	38	529	226	50	23	8	8	15	27	21
14	35	35	42	439	234	45	23	8	8	16	27	21
15	35	35	50	412	138	42	22	8	8	16	28	21
16	32	35	58	394	178	38	22	7	8	17	28	21
17	28	35	74	385	178	50	21	6	8	17	28	21
18	28	35	98	412	202	54	21	6	8	18	29	21
19	28	35	130	430	242	50	21	6	8	18	29	21
20	28	35	178	403	286	42	19	6	8	18	30	21
21	28	35	242	385	234	42	19	6	8	19	30	20
22	28	35	367	394	226	35	19	6	8	19	30	19
23	28	35	574	385	210	32	18	6	9	20	30	18
24	28	35	713	430	178	27	16	6	9	20	30	17
25	28	35	620	448	170	27	16	5	9	21	30	16
26	28	35	466	439	154	27	16	5	10	21	30	15
27	28	35	367	439	154	28	15	5	10	21	30	14
28	28	35	412	448	138	29	15	5	11	21	30	14
29	28	.....	511	421	130	29	15	5	11	21	30	14
30	28	.....	610	394	110	30	14	4	12	21	26	14
31	28	.....	670	.....	72	.....	14	4	.....	21	.....	14

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge interpolated for days on which gage was not read.

Monthly discharge of Silvies River near Burns, Oreg., for 1911.

[Drainage area, 865 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	35	28	29.1	0.034	0.04	1,790	D.
February	35	28	32.3	.037	.04	1,790	D.
March	713	35	215	.249	.29	13,200	C.
April	914	385	547	.632	.71	32,500	B.
May	358	72	220	.254	.29	13,500	B.
June	90	27	50.8	.059	.06	3,020	B.
July	30	14	22.0	.025	.03	1,350	B.
August	13	4	7.5	.0087	.01	461	C.
September	12	6	8.0	.0092	.01	476	C.
October	21	12	16.9	.020	.02	1,040	C.
November	30	21	26.6	.031	.03	1,580	C.
December	24	14	19.2	.022	.03	1,180	D.
The year	914	4	99.4	.115	1.56	71,900	

DONNER UND BLITZEN RIVER NEAR DIAMOND, OREG.

Location.—At the mouth of the canyon in sec. 20, T. 32 S., R. 32½ E., on the P ranch, 2 miles above the P ranch buildings, about 25 miles southwest of Diamond, and about 40 miles above Narrows.

Records available.—January 26, 1909, to July 31, 1910, and November 1 to 12, 1910, at old station below several diversion ditches; May 22, 1910, to December 31, 1911, at present station above all diversion ditches; records fragmentary part of period.

Drainage area.—238 square miles.

Gages.—The original gage was a vertical staff on the right bank just below the wagon bridge near the ranch buildings; the present gage is a vertical staff installed May 22, 1910, at the mouth of the canyon. It was read occasionally during the summer of 1910 and throughout 1911.

Channel.—Probably permanent; bed composed of gravel and sand; one channel at all stages. Banks of the stream covered with a dense growth of willows and underbrush; subject to overflow at flood stages.

Discharge measurements.—At the lower site measurements were made from the wagon bridge; at the present site measurements are made by wading or from a cable.

Winter flow.—Relation of gage height to discharge affected by ice.

Diversions.—The present gage is above all irrigation ditches. Five ditches divert water from the stream above the wagon bridge near the ranch buildings, and about 300 feet below the bridge is a brush and rock dam which is used to divert water into a sixth ditch. When water is to be diverted the dams are repaired and raised by adding more rocks and brush. Two of the ditches carry water during the entire year, three of them during the irrigation season only. No record has been kept of the actual time of operation.

Accuracy.—Conditions at the upper station are fairly good. During the spring the river is subject to considerable diurnal fluctuations and much of the water from the melting snow may pass the station at night when no record would be obtained.

Cooperation.—Station maintained in cooperation with the William Hanley Co., which has furnished record of gage heights.

Discharge measurements of Donner und Blitzen River near Diamond, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 16	F. C. Dillard	3.06	145
18	do	3.85	463
22	R. W. Davenport	3.94	375
25	H. McLain	3.13	172
30	do	3.22	212
Apr. 5	do	3.19	202
10	do	3.00	132
15	do	2.90	105
26	do	3.40	266
May 31	do	3.75	382
31	do	3.70	340
June 20	do	3.60	318
July 17	do	2.80	84.9
Aug. 7[a]	R. W. Davenport	2.60	44.1

[a] Waded at cable section.

Daily gage heights, in feet, of Donner und Blitzen River near Diamond, Oreg., for 1911.

[Jesus Achurra, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		3.10	3.05	3.80	3.00			2.55		
2			3.05	3.80						
3			3.10	3.90			2.50			2.50
4			3.15	3.85		2.60				
5		3.19	3.35	3.75					2.50	
6		3.33	3.20	3.80						
7			3.20	3.80		2.60				
8			3.20	3.75	2.90			2.55		
9			3.15	3.70			2.50			
10		3.00	3.05	3.60						2.50
11		2.90	3.10	3.90		2.55				
12		2.90	3.10	4.05					2.50	
13		2.80	3.10	3.75						
14		2.85	3.00	3.70						
15		2.90	2.95	3.75	2.85			2.55		
16	3.05	2.85	2.90	3.65						
17		2.85	3.05	3.60	2.80		2.50			2.55
18	3.75	2.95	3.00	3.60		2.50				
19		2.90	2.95	3.60					2.50	
20		2.85	3.00	3.60						
21	6.00	2.85	3.05	3.55						
22	4.00	2.90	3.15	3.35	2.80			2.60		
23		3.10	3.35	3.30						
24	3.90	3.25	3.40	3.15			2.55			2.55
25	3.19	3.30	3.30	3.20		2.45				
26	3.00	3.37	3.20	3.10					2.50	
27	2.95	3.25	3.20	3.20						
28	2.95	3.15	3.20	5.10						
29	3.10	3.10	3.25	3.20				2.60		
30	3.25		3.40	3.00	2.65					2.55
31	3.30		3.70							

NOTE.—Gage heights probably affected by ice during latter part of December.

Daily discharge, in second-feet, of Donner und Blitzen River near Diamond, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	160	146	405	132	50	31	38	40	32
2	.....	166	146	405	128	48	32	38	38	32
3	.....	173	160	445	124	46	32	38	36	32
4	.....	180	175	425	120	45	32	38	34	32
5	.....	187	238	385	116	45	32	38	32	32
6	.....	232	190	405	112	45	32	38	32	32
7	.....	207	190	405	109	45	32	38	32	32
8	.....	182	190	385	106	43	32	38	32	32
9	.....	157	175	365	104	41	32	38	32	32
10	.....	132	146	325	102	39	32	38	32	32
11	.....	106	160	445	100	38	32	38	32	.....
12	.....	106	160	508	99	37	32	38	32	.....
13	.....	83	160	385	97	36	32	38	32	.....
14	.....	94	132	365	96	35	32	38	32	.....
15	.....	106	119	385	94	34	32	38	32	.....
16	146	94	106	345	88	33	32	39	32	.....
17	266	94	146	325	83	32	32	40	32	.....
18	385	119	132	325	83	32	32	41	32	.....
19	757	106	119	325	83	32	33	42	32	.....
20	1,130	94	132	325	83	31	34	43	32	.....
21	1,500	94	146	306	83	30	35	44	32	.....
22	485	106	175	238	83	29	36	45	32	.....
23	465	160	238	222	79	28	37	45	32	.....
24	445	206	254	175	75	28	38	45	32	.....
25	187	222	222	190	72	28	38	45	32	.....
26	132	244	190	160	68	28	38	45	32	.....
27	119	206	190	190	64	29	38	45	32	.....
28	119	175	190	160	60	29	38	45	32	.....
29	160	160	206	190	57	30	38	45	32	.....
30	206	153	254	132	54	30	38	44	32	.....
31	222	.....	365	.....	52	31	.....	42	.....	.....

NOTE.—Discharge determined from a rating curve well defined between 40 and 500 second-feet. Discharge interpolated for days on which gage was not read.

Monthly discharge of Donner und Blitzen River near Diamond, Oreg., for 1911.

[Drainage area, 238 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
March 16–31	1,500	119	420	1.76	1.05	13,300	A.
April	244	83	150	.630	.70	8,930	A.
May	365	106	179	.752	.87	11,000	A.
June	508	132	322	1.35	1.51	19,100	A.
July	132	52	90.5	.380	.44	5,560	B.
August	50	28	35.7	.150	.17	2,200	C.
September	38	31	34.2	.144	.16	2,040	C.
October	45	38	40.8	.171	.20	2,510	C.
November	40	32	32.7	.137	.15	1,950	C.
December	.....	.....	28.1	.118	.14	1,730	D.
The period	.....	.....	.....	.....	.....	68,300	

NOTE.—Discharge Jan. 1 to Mar. 15 affected by ice; estimates not made on account of insufficient data. Mean discharge Dec. 11 to 15 estimated 30 second-feet. Mean discharge Dec. 16 to 31 estimated 25 second-feet.

MUD CREEK NEAR DIAMOND, OREG.

Location.—In sec. 4, T. 32 S., R. 32½ E., about 2 miles east of the P ranch buildings, about one-fourth mile east of the ranch field, and about 23 miles southwest from Diamond.

Records available.—March 18 to December 31, 1911.

Drainage area.—Not measured.

Gage.—A vertical staff.

Channel.—Shifts somewhat; bed composed of clean sand.

Discharge measurements.—Made from footbridge near the gage or by wading.

Cooperation.—Station was established by the Eastern Oregon Engineering Co. for the William Hanley Co.

The records show the total flow of the stream at the edge of the valley. As the stream is not spring-fed the channel is practically dry after the run-off from the melting snows on the steep slopes of Steens Mountain has passed.

Discharge measurements of Mud Creek near Diamond, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 18	F. C. Dillard	2.60	12.3
26	H. McLain	2.35	8.1
Apr. 6	....do	2.45	9.3
26	....do	3.00	17.6
May 3	....do	2.86	15.4
15	....do	2.75	13.3
June 1	....do	3.15	18.7
8	....do	3.25	22.3
July 22	....do	1.85	.6
Aug. 7	R. W. Davenport	1.75	*a* .2

a Estimated.

Daily gage height, in feet, of Mud Creek near Diamond, Oreg., for 1911.

[H. F. William Suhr, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.8	2.65	3.15				1.75		
2		2.9	2.65		2.25					
3		2.7	2.9				1.75			1.75
4		2.55	3.0			1.8				
5		2.6	3.4						1.7	
6		2.5	3.1	3.15						
7		2.5	2.95			1.75				
8		2.4	3.0	3.25				1.75		
9		2.55	2.9							
10		2.4	2.7				1.75			1.75
11		2.3	2.75			1.7				
12		2.3	2.85	2.9					1.7	
13		2.2	2.8	2.8	2.0					
14		2.1	2.7	2.8						
15		2.3	2.75	2.9				1.75		
16		2.3	2.65	2.9						
17		2.3	2.65	2.85			1.75			1.75
18	2.6	2.35	2.55			1.7				
19		2.25	2.5						1.75	
20		2.3	2.6	2.65						
21		2.25	2.6							
22		2.35	2.7		1.85			1.75		
23		2.45	2.95							
24	2.7	2.7	2.95				1.75			1.75
25	2.45	2.9	2.85	2.4		1.75				
26	2.35	3.0	3.0						1.75	
27	2.3	3.0	2.9							
28	2.3	2.8	2.85							
29	2.4	2.65	2.9		1.8			1.75		
30	2.5	2.6	2.9	2.35						1.75
31	2.7									

Daily discharge, in second-feet, of Mud Creek near Diamond, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		14	12	20	3.3			0.2		
2		16	12	20	2.6					
3		13	16	20	2.5		0.2			0.2
4		11	18	20	2.4	0.3				
5		11	25	20	2.3				0.2	
6		10	19	20	2.2					
7		10	17	21	2.0	.2				
8		9	18	22	1.8			.2		
9		11	16	20	1.6					
10		9	13	18	1.4		.2			.2
11		8	13	16	1.2	.2				
12		8	15	14	1.0				.2	
13		6	14	12	.9					
14		5	13	12	.9					
15		8	13	14	.8			.2		
16		8	12	14	.8					
17		8	12	13	.7		.2			.2
18	11	8	11	12	.7	.2				
19	11	7	10	10	.6				.2	
20	11	8	11	9	.5					
21	12	7	11	8	.5					
22	12	8	13	7	.4			.2		
23	13	9	17	6	.4					
24	13	13	17	5	.4		.2			.2
25	9	16	15	4	.4	.3				
26	8	18	18	4	.3				.2	
27	8	18	16	4	.3					
28	8	14	15	4	.3					
29	9	12	16	4	.3			.2		
30	10	11	16	4	.3					.2
31	13		18		.3					

NOTE.—Discharge Mar. 18 to June 8 determined from a well-defined rating curve; discharge for remainder of year practically estimated.

Monthly discharge of Mud Creek near Diamond, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March (18-31)	13	8	10.6	294	D.
April	18	5	10.5	625	A.
May	25	10	14.9	916	A.
June	22	4	12.6	750	C.
July	3.3	.3	1.10	68	D.
August			.24	15	D.
September			.2	12	D.
October			.2	12	D.
November			.2	12	D.
December			.2	12	D.
The period				2,720	

NOTE.—Discharge June to December practically estimated.

BRIDGE CREEK NEAR DIAMOND, OREG.

Location.—In sec. 34, T. 31 S., R. 32½ E., about 4 miles northeast of the P ranch buildings and one-fourth mile east of the ranch field, and about 20 miles southwest from Diamond.

Records available.—March 18 to August 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—In alluvium and clay; shifts slightly.

Discharge measurements.—Made from footbridge near gage.

Accuracy.—The results obtained during the high-water stage in the spring are good and the flow of the stream is so steady that the discharge can be estimated during the remainder of the year.

Cooperation.—Station established and records furnished by the Eastern Oregon Engineering Co. for the William Hanley Co.

The records show the total flow of the stream at the edge of the valley.

Discharge measurements of Bridge Creek near Diamond, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 18	F. C. Dillard	2.30	12.9
24	H. McLain	2.38	16.4
26	do	2.10	10.0
Apr. 6	do	2.20	13.8
27	do	2.58	24.2
May 3	do	2.48	20.2
June 1	do	2.35	17.4
20	do	2.10	11.6
July 22	do	2.00	10.2
Aug. 7	R. W. Davenport	1.98	9.8

Daily gage height, in feet, and discharge, in second-feet, of Bridge Creek near Diamond, Oreg., for 1911.

Day.	March.		April.		May.		June.		July.		August.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1				14		18	2.35	17				
2			2.31	16		19		17	2.05	11		
3				16	2.48	20		17				
4				15		20		17			2.00	10
5				14		20		17				
6			2.20	14		20	2.35	17				
7				15	2.45	20		17				
8				15		19	2.35	17				
9			2.30	16	2.42	19		17				
10				14		18		16				
11			2.15	13		18		15			2.00	10
12				13	2.35	17		15				
13				13		16		14	2.00	10		
14				13		16		13				
15				13	2.28*	16		12				
16			2.16	13		15	2.10	12				
17				13		15						
18	2.30	14		13	2.25	15					2.00	10
19		14	2.14	13		15						
20		14		14		15	2.10	12				
21		15		14		16						
22		15		14		16			2.00	10		
23		16	2.26	15		17						
24	2.38	16		18	2.35	17						
25		13	2.50	21		16	2.05	11			2.00	10
26	2.10	10		22		16						
27		10	2.58	23		16						
28		11		21	2.25	15						
29	2.16	11		19		15			2.00	10		
30		13	2.36	17	2.25	15	2.05	11				
31	2.35	15				16						

NOTE.—Discharge Mar. 18 to Apr. 1 determined from a poorly defined rating curve; Apr. 2 to Aug. 31 determined from a well-defined curve. Discharge interpolated for days on which gage was not read, in order to compute monthly estimates.

Monthly discharge of Bridge Creek near Diamond, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 18–31	16	10	13.4	372	C.
April	23	13	15.5	922	B.
May	20	15	17.0	1,050	B.
June	17	11	13.7	815	B.
July	11	10	10.3	633	C.
August	10	10	10	615	C.
The period				4,410	

NOTE.—Discharge Jan. 1 to Mar. 17 and September to December was probably nearly constant at approximately 10 second-feet. The total run-off for the year with the addition of these periods was about 8,310 acre-feet.

KRUMBO CREEK NEAR DIAMOND, OREG.

Location.—Near the mouth of the stream, in sec. 19, T. 30 S., R. 32 E., about halfway between Diamond and the P ranch, half a mile west of the old Krumbo ranch house.

Records available.—March 17, 1911, to July 18, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—Likely to shift; bed composed of clean sand and gravel.

Discharge measurements.—Made from footbridge.

Cooperation.—Station established by the Eastern Oregon Engineering Co., for the William Hanley Co.

The water of this stream is derived from springs and from the melting of the snow on Steens Mountain. Flood run-off seems to come somewhat earlier than on other streams in this region probably because of the lower elevation of the drainage basin.

The records show the total flow available from this stream for irrigation in the Donner und Blitzen Valley.

Discharge measurements of Krumbo Creek near Diamond, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 17	Dillard and McLain	3.22	18.9
24	H. McLain	3.09	17.1
26	....do	2.52	6.8
29	....do	2.77	10.7
Apr. 3	....do	2.65	9.1
11	....do	2.35	5.8
14	....do	2.25	4.9
23	....do	2.12	4.0
June 16	....do	2.05	3.5
Aug. 7	R. W. Davenport	1.96	4.2

Daily gage height, in feet, and discharge, in second-feet, of Krumbo Creek near Diamond, Oreg., for 1911.

[H. McLain, observer.]

Day.	March.		April.		May.		June.		July.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1				9.5		3.7		3.5		3.4
2				9.0		3.6		3.6	2.10	3.5
3			2.65	8.5	2.10	3.5		3.6		3.5
4				8.0		3.5		3.6		3.4
5				7.5		3.5		3.6		3.4
6			2.50	7.0		3.5	2.12	3.6		3.3
7				7.7	2.10	3.5		3.6		3.3
8				8.5		3.5	2.12	3.6		3.2
9			2.73	9.3	2.10	3.5		3.6		3.2
10				7.4		3.5		3.5		3.2
11			2.35	5.5		3.5		3.4		3.1
12				5.2	2.10	3.5		3.4		3.1
13				5.0		3.5		3.3	2.00	3.0
14			2.27	4.7		3.4		3.3		3.0
15				5.1	2.08	3.4		3.2		2.9
16			2.36	5.6		3.4	2.05	3.2		2.9
17	3.20	18		5.2		3.5		3.2		2.8
18		18		4.8	2.10	3.5		3.1	1.95	2.8
19		19	2.24	4.4		3.5		3.1		
20	3.26	19		4.2	2.10	3.5	2.00	3.0		
21		43		4.0		3.5		3.0		
22	4.70	68		3.8		3.5		3.0		
23		42	2.12	3.6		3.5		3.0		
24	3.09	16		4.0	2.10	3.5	2.00	3.0		
25		11	2.24	4.4		3.5		3.0		
26	2.49	7		5.0		3.5		3.0		
27		8	2.35	5.5		3.6		3.1		
28		9		5.0	2.12	3.6		3.1		
29	2.80	10		4.4		3.5		3.2		
30		10	2.15	3.8	2.10	3.5	2.05	3.2		
31	2.80	10				3.5				

NOTE.—Discharge determined from a rating curve well defined below 25 second-feet. Discharge interpolated for days on which gage was not read.

Monthly discharge of Krumbo Creek near Diamond, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 17–31	68	7	20.5	610	C.
April	9.5	3.6	5.85	348	B.
May	3.7	3.4	3.51	216	B.
June	3.6	3.0	3.29	196	B.
July 1–18	3.5	2.8	3.17	103	C.

NOTE.—Discharge prior to Mar. 17 and subsequent to July 18 estimated as between 3 and 4 second-feet; hence the run-off for the year is about 3,150 acre-feet.

KEIGER CREEK NEAR DIAMOND, OREG.

Location.—In sec. 10, T. 30 S., R. 33 E., about 100 yards above the point where the creek forks; about 2½ miles southeast of Diamond and above all present diversions.

Records available.—January 26, 1909, to May 31, 1910, on old station; May 14 to August 31, 1911, on new station.

Drainage area.—50 square miles.

Gages.—The original gage, established January 26, 1909, was about 3 miles south of Diamond in sec. 10, T. 30 S., R. 33 E.; the present gage, established May 14, 1911, is a vertical staff a short distance from the site of the old gage.

Channel.—One at all stages; bed of the stream is composed of gravel and is probably permanent.

Discharge measurements.—Made from a footbridge or by wading.

Accuracy.—The results obtained at the original site were rendered somewhat inaccurate by the flat grade of the stream and the obstructions of the flow by willows and underbrush trailing in the water. Gage readings at the new site are rather fragmentary, but as the stream is spring fed and its flow very steady records are in general good.

Cooperation.—Station established in 1911 by the Eastern Oregon Engineering Co. for the William Hanley Co.

Discharge measuremnts of Keiger Creek near Diamond, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 14	F. C. Dillard	1.65	33.7
20	H. McLain	1.84	43.5
23	....do	2.28	74.6
27	....do	1.80	42.7
Apr. 1	....do	2.60	89.2
7	....do	2.08	55.2
8	....do	1.98	48.3
28	....do	2.35	77.2
29	....do	2.15	65.1
May 6	....do	2.49	98.0
10	....do	2.25	76.9
11	....do	2.17	70.1
23	....do	2.42	84.8
June 9	....do	2.62	108
10	....do	2.55	104
13	....do	2.75	117
14	....do	2.80	123
15	....do	3.08	128
21	....do	2.40	91.4
July 3	....do	1.70	41.6
12	....do	1.55	26.4
19	....do	1.45	20.6
Aug. 5	R. W. Davenport	1.21	11.4

Daily gage height, in feet, and discharge, in second-feet, of Keiger Creek near Diamond, Oreg., for 1911.

[Christian Shaper, observer.]

Day.	March.		April.		May.		June.		July.		August.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	2.60	103	.....	79	2.75	117	.....	43	.....	11
2	.....	.....	2.80	122	.....	85	3.00	142	.....	38	.....	11
3	.....	.....	.....	109	.....	91	3.20	162	1.70	34	.....	11
4	.....	.....	.....	97	2.55	98	3.40	183	.....	32	.....	11
5	.....	.....	.....	85	2.85	127	2.90	132	1.65	31	1.20	11
6	.....	.....	.....	73	2.50	94	2.80	122	1.70	34	1.20	11
7	.....	.....	2.10	61	2.60	103	2.80	122	1.70	34	.....	11
8	.....	.....	1.98	53	2.55	98	2.90	132	1.70	34	.....	11
9	.....	.....	.....	50	2.30	77	2.60	103	1.65	31	.....	11
10	.....	.....	.....	46	2.15	65	2.65	108	1.60	28	.....	11
11	.....	.....	.....	43	2.20	69	2.95	137	1.55	26	.....	11
12	.....	.....	1.80	40	2.25	73	3.20	162	1.55	26	.....	11
13	.....	.....	1.96	51	2.20	69	2.75	117	.....	25	1.20	11
14	1.65	31	.....	51	2.20	69	2.80	122	.....	24	.....	11
15	.....	33	.....	51	2.15	65	3.00	142	.....	23	.....	11

Daily gage height, in feet, and discharge, in second-feet, of Keiger Creek near Diamond, Oreg., for 1911—Continued.

Day.	March.		April.		May.		June.		July.		August.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
16	.....	35	.....	50	2.20	69	2.75	117	1.50	23	.....	10
17	.....	37	1.95	50	2.15	65	2.55	98	.....	22	.....	10
18	.....	39	1.95	50	2.00	54	2.65	108	.....	21	.....	10
19	.....	42	.....	57	1.95	50	2.40	85	1.45	20	.....	9
20	1.85	44	.....	65	1.95	50	2.35	81	.....	18	1.10	9
21	.....	55	.....	72	2.00	54	2.45	90	.....	16	.....	9
22	.....	66	.....	79	2.20	69	2.35	81	.....	15	.....	9
23	2.30	77	.....	86	2.45	90	2.20	69	1.30	14	.....	9
24	.....	67	2.50	94	2.70	112	2.00	54	.....	14	.....	9
25	.....	58	.....	91	2.50	94	1.90	47	.....	13	.....	9
26	.....	49	.....	88	2.55	98	1.90	47	.....	13	.....	9
27	1.80	40	.....	85	2.40	85	2.00	54	.....	12	1.10	9
28	1.77	38	2.35	81	2.25	73	2.00	54	.....	12	.....	9
29	.....	54	2.15	65	2.35	81	1.90	47	.....	11	.....	9
30	.....	70	.....	72	2.40	85	1.90	47	1.20	11	.....	9
31	.....	87	.....	.....	2.40	85	.....	.....	.....	11	.....	9

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge interpolated for days on which gage was not read.

Monthly discharge of Keiger Creek near Diamond, Oreg., for 1911.

[Drainage area, 50 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
March 14–31	87	31	51.2	1.02	0.68	1,730	B.
April	122	40	70.7	1.41	1.57	4,210	B.
May	127	50	79.9	1.60	1.84	4,910	A.
June	183	47	103	2.06	2.30	6,130	A.
July	43	11	22.9	.458	.53	1,410	B.
August	11	9	10.0	.200	.23	615	C.
The period	.....	.....	.....	.....	.....	19,000	

COCOMONGO CREEK NEAR DIAMOND, OREG.

Location.—In sec. 8, T. 30 S., R. 33 E., about 2½ miles southwest of Diamond and about 1 mile up the creek from the old Cummings place.

Records available.—March 14 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—Sand, may shift.

Discharge measurements.—Made from footbridge.

Cooperation.—Station established by the Eastern Oregon Engineering Co. for the William Hanley Co.

The rating curve for this station has not yet been constructed and estimates of daily and monthly discharge for 1911 are therefore not available.

Discharge measurements of Cocomongo Creek near Diamond, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
July 19	H. McLain	0.95	1.7
Aug. 5	R. W. Davenport	.35	.04

Daily gage height, in feet, of Cocomongo Creek near Diamond, Oreg., for 1911.

[H. McLain, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Day.	Mar.	Apr.	May.	June.	July.
1		1.85				16			1.20		
2		1.81		1.50		17		1.36	1.10		
3					1.10	18		1.45			
4			1.51			19					
5				1.45		20	1.61				
6			1.60		1.00	21			1.10		
7		1.70				22					
8		1.49			.90	23	1.96		1.25	1.10	
9				1.40		24		1.55			
10			1.40			25					
11			1.35			26					
12		1.33			.85	27	1.54				
13		1.30		1.40		28	1.49	1.70			
14						29		1.53	1.15	1.10	
15						30					
						31					

NOTE.—Channel dry August to December.

M'COY CREEK NEAR DIAMOND, OREG.

Location.—In sec. 12, T. 30 S., R. 32 E., about 5 miles southwest of Diamond and about 1,000 feet above Kesterson's ranch house.

Records available.—January 27, 1909, to May 22, 1910; May 23, 1910 (new site), to December 31, 1911.

Drainage area.—56 square miles.

Gages.—The original gage was 3 miles from Diamond post office; at the present site, 2½ miles above the original gage, which has been occupied since May 23, 1910; the gage is a vertical staff.

Channel.—Clean gravel and sand; liable to shift.

Discharge measurements.—Made from a foot bridge 25 yards above the vertical staff gage or by wading.

Winter flow.—Relation of gage height to discharge affected by ice.

Diversions.—The present station is above all diversions except one unimportant ditch. Several irrigation ditches divert water above the original site for use of hay lands in Diamond Swamp. No attempt was made to estimate the quantity of water carried by these ditches.

Accuracy.—Conditions at the new station favor accurate determination of discharge.

Discharge measurements of McCoy Creek near Diamond, Oreg,. in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 15	F. C. Dillard	2.30	20.2
19	H. McLain	2.63	28.5
26	.....do	2.30	17.3
Apr. 3	.....do	2.68	27.7
14	.....do	2.10	10.2
27	.....do	3.00	41.6
May 3	.....do	2.92	40.6
7	.....do	3.15	48.8
18	.....do	2.75	34.1
20	.....do	2.65	30.8
24	.....do	3.85	89.3
28	.....do	3.30	60.2
June 1	.....do	4.30	115
2	.....do	4.77	158
2	.....do	4.70	152
13	.....do	4.43	140
13	.....do	4.40	130
20	.....do	3.50	77.1
26	.....do	2.80	42.5
July 21	.....do	2.10	12.7
Aug. 5	R. W. Davenport	1.77	5.65

Daily gage height, in feet, of McCoy Creek near Diamond, Oreg., for 1911.

[Mrs. Grant Kesterson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.00	2.50	1.80	2.55	2.80	4.60	2.70	1.85	1.60	1.72	1.80	.....
2	1.87	2.20	1.80	2.70	2.80	5.00	2.65	1.82	1.60	1.85	1.80	.....
3	1.90	2.30	1.80	2.70	2.95	5.00	2.70	1.80	1.60	1.87	1.80	.....
4	1.90	2.70	1.70	.....	3.25	4.90	2.80	1.80	1.60	1.90	1.80	.....
5	2.00	2.75	1.85	2.70	3.80	4.50	2.80	1.80	1.65	1.78	.....	.....
6	1.95	1.80	2.05	2.50	3.30	4.60	2.70	1.80	1.75	1.75	1.80	.....
7	1.85	1.80	2.00	2.50	3.10	4.40	2.60	1.80	1.75	1.78	1.80	1.70
8	1.80	.....	2.00	2.45	3.20	4.50	2.50	1.78	.....	1.80	1.80	1.70
9	1.85	.....	1.98	2.40	3.00	4.00	2.30	1.75	1.68	.....	.....	1.72
10	1.98	.....	1.95	2.40	2.85	4.40	2.30	1.75	1.68	1.90	1.85	1.70
11	1.97	.....	1.95	2.42	2.85	5.00	2.30	1.72	1.67	1.87	1.90	1.75
12	1.95	1.80	1.97	2.38	.....	5.20	2.28	1.70	1.65	1.90	.....	1.75
13	1.80	.....	2.10	2.36	3.15	4.50	2.30	1.70	1.65	1.90	1.85	1.70
14	1.80	1.80	2.26	2.35	2.90	4.40	2.40	1.70	1.65	1.90	1.85	1.70
15	1.80	1.80	2.55	2.35	2.85	4.50	2.30	1.70	.....	1.87	2.00	1.70
16	1.80	1.80	2.50	2.25	2.80	3.90	2.20	1.70	1.70	.....	1.90	1.65
17	1.90	1.80	3.20	2.28	2.80	4.00	2.20	1.70	1.70	1.87	.....	.....
18	1.98	1.80	2.30	2.35	2.75	.....	2.20	1.70	1.70	1.87	1.90	1.65
19	1.90	1.80	3.00	2.30	2.60	3.60	.....	1.68	1.70	1.87	1.90	1.65
20	1.90	1.75	3.00	2.30	2.60	3.70	2.10	1.68	1.70	1.85	1.90	1.70
21	1.90	1.75	3.25	2.30	.....	4.00	2.00	1.67	1.70	1.80	1.90	1.85
22	1.85	1.70	2.70	2.37	.....	4.20	2.00	1.67	1.68	1.80	1.87	1.85
23	.....	1.75	2.85	2.60	3.50	3.00	1.98	1.65	1.68	1.80	1.85	1.90
24	2.10	1.80	2.40	3.00	3.60	2.90	1.98	1.65	1.70	1.80	.....	1.90
25	2.05	1.80	2.40	3.00	3.60	3.00	2.00	1.65	.....	1.80	1.80	1.85
26	2.00	1.75	2.28	3.10	3.60	2.80	2.10	1.65	1.70	1.78	1.80	1.85
27	2.00	1.75	2.03	3.00	3.40	3.20	2.00	1.65	1.75	1.78	1.85	1.80
28	.....	1.80	2.25	2.90	3.30	3.00	1.90	1.65	1.75	1.80	1.85	1.80
29	2.05	.....	2.30	2.80	3.40	3.00	1.90	1.65	1.73	1.80	.....	.....
30	3.70	.....	2.35	2.75	4.00	2.80	1.88	1.63	1.73	1.78	.....	1.80
31	2.90	.....	2.45	.....	4.80	.....	1.86	1.63	.....	.....	.....	1.85

NOTE.—Gage heights probably affected by ice during January and February, first part of March, and latter part of December.

Daily discharge, in second-feet, of McCoy Creek near Diamond, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		24	34	138	36	7	3	4.4	6	6
2		30	34	166	34	6	3	7	6	6
3		30	42	166	36	6	3	7	6	5
4		30	56	168	40	6	3	8	6	5
5		30	88	140	40	6	3.5	5.6	6	4
6		22	59	147	36	6	5	5	6	4
7		22	49	133	32	6	5	5.6	6	4
8		20	54	140	28	5.6	4.4	6	6	4
9		19	44	107	20	5	3.8	7	7	4.4
10		19	36	133	20	5	3.8	8	7	4
11		20	36	175	20	4.4	3.7	7	8	5
12		18	44	191	19	4	3.5	8	7	5
13	10	18	52	140	20	4	3.5	8	7	4
14	15	18	39	133	24	4	3.5	8	7	4
15	24	18	36	140	20	4	3.8	7	10	4
16	22	14	34	101	16	4	4	7	8	3.5
17	54	15	34	107	16	4	4	7	8	3.5
18	16	18	32	95	16	4	4	7	8	3.5
19	44	16	26	83	15	3.8	4	7	8	3.5
20	44	16	26	89	13	3.8	4	7	8	
21	56	16	40	107	10	3.7	4	6	8	
22	30	18	55	119	10	3.7	3.8	6	7	
23	36	26	70	50	10	3.5	3.8	6	7	
24	19	44	76	45	10	3.5	4	6	6	
25	19	44	76	50	10	3.5	4	6	6	
26	15	49	76	40	13	3.5	4	5.6	6	
27	9	44	64	60	10	3.5	5	5.6	7	
28	14	39	59	50	8	3.5	5	6	7	
29	16	34	64	50	8	3.5	4.6	6	7	
30	18	32	100	40	8	3.3	4.6	5.6	6	
31	20		152		7	3.3		5.8		

NOTE.—Discharge determined from two well-defined rating curves, one applicable Jan. 1 to June 2, the other June 3 to Dec. 31. Discharge interpolated for days on which gage was not read.

Monthly discharge of McCoy Creek near Diamond, Oreg., for 1911.

[Drainage area, 56 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January			7	0.125	0.14	430	D.
February			4	.071	.07	222	D.
March	56		17.5	.312	.36	1,080	C.
April	49	14	25.4	.454	.51	1,510	B.
May	152	26	54.4	.971	1.12	3,340	A.
June	191	40	110	1.97	2.19	6,550	A.
July	40	7	19.5	.348	.40	1,200	B.
August	7	3.3	4.42	.079	.09	272	D.
September	5	3	3.94	.070	.08	234	D.
October	8	4.4	6.49	.116	.13	399	D.
November	10	6	6.93	.124	.14	412	D.
December			3.82	.068	.08	235	D.
The year	191		21.9	.391	5.31	15,900	

NOTE.—Discharge Jan. 1 to Mar. 12 and Dec. 20 to 31 estimated, because of ice, from climatologic records. Mean discharge Mar. 1 to Mar. 12 estimated 5 second-feet. Mean discharge Dec. 20 to 31, estimated 3 second-feet.

RIDDLE CREEK NEAR SMITH, OREG.

Location.—In sec. 7, T. 29 S., R. 34 E., three-eighths mile above Riddle ranch house; about 3 miles east of Smith post office, and a short distance below the forks of the creek.

Records available.—March 11 to June 30, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—Not likely to shift; bed composed of rocks and sand; banks may overflow at extreme high stages.

Discharge measurements.—Made from footbridge or by wading.

Cooperation.—Station established by the Eastern Oregon Engineering Co. for William Hanley Co.

Riddle Creek flows from the northern portion of Steens Mountain through Happy Valley about 10 miles northeast of Diamond. It is spring-fed and its flow is well maintained throughout the year. The records show the amount of water available from this stream for irrigation in Happy Valley.

Discharge measurements of Riddle Creek near Smith, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 12	F. C. Dillard	1.15	12.7
21	H. McLain	1.98	64.3
22	.....do	2.32	80.7
27	.....do	1.61	37.9
Apr. 1	.....do	1.99	59.2
7	.....do	1.49	30.7
17	.....do	1.35	24.0
May 4	.....do	1.25	18.7
17	.....do	1.10	14.2
22	.....do	.98	9.7
June 3	.....do	.90	7.0
22	.....do	.80	4.9

Daily gage height, in feet, and discharge, in second-feet, of Riddle Creek near Smith, Oreg., for 1911.

Day.	March.		April.		May.		June.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	1.99	59	.....	20	0.90	8
2	.....	.....	1.80	47	1.20	18	.....	8
3	.....	.....	.....	40	.....	18	.90	8
4	.....	.....	1.55	34	1.20	18	.....	8
5	.....	.....	.....	32	.....	18	.90	8
6	.....	.....	1.50	31	1.20	18	.....	8
7	.....	.....	1.50	31	.....	18	.90	8
8	.....	.....	1.50	31	1.20	18	.....	8
9	.....	.....	.....	31	.....	17	.90	8
10	1.53	32	1.50	31	1.15	16	.....	8
11	1.15	16	.....	28	.....	16	.90	8
12	1.15	16	1.35	24	1.15	16	.....	8
13	.....	21	.....	24	.....	15	.80	5
14	.....	26	1.35	24	1.10	14	.....	5
15	.....	31	.....	24	.....	14	.80	5
16	.....	36	1.35	24	1.10	14	.....	5
17	.....	41	1.33	23	1.10	14	.80	5
18	.....	46	1.35	24	1.05	12	.....	5
19	.....	51	.....	24	.....	12	.80	5
20	.....	55	1.35	24	1.00	11	.....	5
21	1.99	59	.....	24	.....	11	.80	5
22	2.68	117	1.35	24	1.00	11	.80	5
23	.....	98	.....	24	.....	11	.80	5
24	2.25	79	1.35	24	1.05	12	.....	5
25	2.00	60	.....	24	.....	12	.80	5
26	.....	48	1.35	24	1.05	12	.....	5
27	1.61	36	.....	24	.....	12	.80	5
28	.....	48	1.35	24	1.05	12	.....	5
29	2.00	60	.....	23	.....	12	.80	5
30	.....	58	1.30	22	1.05	12	.....	5
31	1.95	56	.....	.....	.....	10	.....	.....

NOTE.—Discharge determined from a well-defined rating curve. Discharge interpolated for days on which gage was not read.

Monthly discharge of Riddle Creek near Smith, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 10–31	117	16	49.5	2,160	B.
April	59	22	28.2	1,680	A.
May	20	10	14.3	879	A.
June	8	5	6.20	369	C.

NOTE.—It is probable that the average discharge for July to December was approximately 5 second-feet.

SILVER CREEK NEAR RILEY, OREG.

Location.—In sec. 30, T. 22 S., R. 26 E., 12 miles above Riley, 3 miles below the junction of Nichols Creek.

Records available.—April 19, 1904, to July 14, 1906; February 15 to December 12, 1909; April 6 to October 19, 1910; December 31, 1910, to April 22, 1911, on which date the station was again discontinued.

Drainage area.—266 square miles.

Gages.—Vertical and inclined staff. At the point where this station has been located Silver Creek is divided into three channels by an earth and rock dam. The original gage, established in 1904, was placed in the third or left channel. When the station was reestablished in 1909 a new gage was installed on the right bank, and in December, 1910, a third gage was installed by the Silver Valley Irrigation Co. above the influence of the dam. This last gage was read until April 22, 1911.

Channel.—Clean gravel; not likely to shift.

Discharge measurements.—At the original station measurements were made from the three bridges which cross the channels. After the station was reestablished in 1909 measurements were made from a cable which was installed 50 feet below the new gage, 300 feet above the bridges, and about 100 feet above the dam. The dam is rather unstable, as the brush, earth, and smaller stones are washed away by the first flood and are not replaced until the water subsides in the spring. The 1909 gage heights were affected by these changes.

Winter flow.—Relation of gage height to discharge affected by ice.

Diversions and storage.—The water of Silver Creek is used to irrigate hay lands in the upper Silver Creek valley. Below this point the valley narrows to a canyon and opens out again near Silver Lake into lower Silver Valley. During the years of low run-off no water from the upper valley reaches the lower. The Silver Creek reservoir site, which was investigated by the United States Reclamation Service and also by the Silver Valley Irrigation Co., is 3 or 4 miles above the gaging section. Water stored at this point could be used to irrigate large areas of agricultural lands on both sides of the stream.

Accuracy.—Results at this station are only approximately accurate.

Cooperation.—Station maintained in cooperation with the Silver Valley Irrigation Co.

Discharge measurements of Silver Creek near Riley, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 11[a]	R. W. Davenport	0.98	23.1
24	R. D. Cooper	4.15	346
27	.....do	3.00	229
30	.....do	4.00	341
31	.....do	4.70	406
31	.....do	4.70	441
Apr. 2	.....do	4.82	473
4	.....do	3.61	299
13	.....do	2.20	119
17	Cooper and Gowan	1.98	100
Aug. 2	R. W. Davenport	.10	.11

[a] Old gage read 1.75. Rotten ice and slush ice may have affected gage height.

Daily gage height, in feet, and discharge, in second-feet, of Silver Creek near Riley, Oreg., for 1911.

[Ben Mutter, observer.]

Day.	February.		March.		April.		Day.	February.		March.		April.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	0.50	6	4.90	475	16	.....	.....	1.80	81	2.00	100
2	.....	.....	.70	12	4.70	445	17	.....	.....	1.70	72	2.00	100
3	.....	.....	.75	14	4.20	370	18	.....	.....	1.60	63	2.00	100
4	.....	.....	.70	12	3.60	287	19	0.75	.....	2.00	100	2.00	100
5	.....	.....	.80	16	3.30	248	20	.80	.....	1.90	90	1.90	90
6	.....	.....	.75	14	2.90	198	21	.70	.....	2.50	152	1.90	90
7	.....	.....	.70	12	2.70	174	22	.85	.....	3.20	235	1.95	95
8	.....	.....	.75	14	2.65	168	23	.75	.....	4.30	385	.....	.....
9	.....	.....	1.00	24	2.60	163	24	.70	.....	4.20	370	.....	.....
10	.....	.....	1.20	34	2.60	163	25	.75	.....	3.70	300	.....	.....
11	.....	.....	1.00	24	2.50	152	26	.45	.....	3.20	235	.....	.....
12	.....	.....	1.50	55	2.40	141	27	.70	.....	3.00	210	.....	.....
13	.....	.....	1.00	24	2.20	120	28	.75	.....	3.60	287	.....	.....
14	.....	.....	1.55	59	2.15	115	29	.....	.....	3.30	248	.....	.....
15	.....	.....	2.00	100	2.05	105	30	.....	.....	4.10	356	.....	.....
							31	.....	.....	4.60	430	.....	.....

NOTE.—Ice probably affected gage heights during February and slightly from Mar. 1 to 10. No correction made for possible effect of ice Mar. 1 to 10. Stream probably went dry about July 1.

Monthly discharge of Silver Creek near Riley, Oreg., for 1911.

]Drainage area, 266 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
March	430	6	130	0.486	0.56	7,990	A.
April 1-22	475	90	182	.684	.56	7,940	B.

NOTE.—Discharge January and February estimated by engineer of Silver Lake Irrigation Co. to have been 1 second-foot.

ALVORD LAKE BASIN.

TROUT CREEK NEAR DENIO, OREG.

Location.—At the mouth of the canyon just below a bridge in sec. 26, T. 39 S., R. 36 E., 4½ miles east of Trout Creek ranch buildings and 14 miles northeast of Denio.

Records available.—March 25 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—May shift somewhat; bed composed of gravel and sand.

Discharge measurements.—Made by wading.

Diversions and storage.—The normal flow of the creek, which is derived chiefly from melting snow, is entirely appropriated for irrigation below the station. Water is diverted from the creek and its tributaries for use of three or four small ranches in the canyon above the station, and after the creek enters the valley much of the water is diverted for use of the Trout Creek ranch. Further irrigation from this stream will depend on the storage of the winter flow and on more efficient use of the water. An unsurveyed reservoir site about 1½ miles above the mouth of the canyon would probably store 10,000 acre-feet by means of a 100-foot dam.

Accuracy.—The results obtained at this station are reliable, conditions are fairly permanent; the flow is steady and the gage readings afford a sufficiently accurate estimate of the discharge.

Cooperation.—Station maintained in cooperation with Thomas & Walter, proprietors of the Trout Creek ranch.

Discharge measurements of Trout Creek near Denio, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 25	R. W. Davenport	1.20	35.4
29	do	1.16	29.2
30	do	1.22	34.9
Apr. 3	do	1.46	50.7
6	do	1.39	45.0
7	do	1.32	39.3
14	do	1.13	25.6
17	do	1.10	24.1
Aug. 13	do	.66	1.6

Daily gage height, in feet, of Trout Creek near Denio, Oreg., for 1911.

[H. W. McAllister, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1		1.3		2.0					
2		1.4	1.6		1.15				
3		1.4		2.15					
4		1.4	1.7		1.1				
5		1.4		2.25					
6		1.4	1.85		1.1				
7		1.35	1.8	2.05					
8			1.75		1.1				
9		1.3	1.75	1.95					
10		1.3	1.6		1.0		0.62		
11		1.3		1.9					
12		1.25	1.7						
13		1.2		1.95		0.65			0.97
14		1.2	1.7						
15				1.95				0.82	

Daily gage height, in feet, of Trout Creek near Denio, Oreg., for 1911—Continued.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
16		1.15	1.55		1.0				
17		1.1		1.75					
18			1.45						
19		1.1		1.65					
20			1.4		1.0		0.6		
21		1.1		1.7					
22			1.55					0.82	
23		1.2		1.6					
24			1.9						
25	1.3	1.4		1.35					
26	1.3		1.85						
27	1.2	1.65		1.3	.95				
28	1.2		1.7						
29	1.15			1.25				.82	
30	1.2	1.5	1.8				.72		
31	1.25								

Daily discharge, in second-feet, of Trout Creek near Denio, Oreg., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1		38	58	104	30				
2		46	63	112	28				
3		46	68	120	26				
4		46	73	126	24				
5		46	80	132	24				
6		46	88	121	24				
7		42	83	110	24				
8		40	78	104	24				
9		38	78	98	21				
10		38	63	95	18		1.4		
11		38	68	93					
12		34	73	95					
13		31	73	98		2			16
14		31	73	98					
15		30	65	98				8	
16		28	58	88	18				
17		24	54	78					
18		24	50	73					
19		24	48	68					
20		24	46	70	18		1		
21		24	52	73					
22		28	58	68				8	
23		31	76	63					
24		38	93	52					
25	38	46	90	42					
26	38	57	88	40					
27	31	68	80	38	15				
28	31	64	73	36					
29	28	59	78	34				8	
30	31	54	83	32			3.8		
31	34		93						

NOTE.—Discharge determined from a curve fairly well defined between 20 and 60 second-feet. Discharge interpolated for days on which gage was not read during April to August.

Monthly discharge of Trout Creek near Denio, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 25–31	38	28	33	458	B.
April	68	24	39.4	2,340	B.
May	93	46	71.1	4,370	B.
June	132	32	82.0	4,940	B.
July	30	.....	18.9	1,160	B.
August	.....	.....	5	307	D.
September	.....	.....	2	119	D.
October	.....	.....	7	430	D.
November	.....	.....	16	952	D.
December	.....	.....	18	1,110	D.
The period	.....	.....	.....	16,200	

NOTE.—Mean discharge August to December estimated and only roughly approximate.

LITTLE COTTONWOOD CREEK NEAR DENIO, OREG.

Location.—Near mouth of the canyon in sec. 28, T. 39 S., R. 35 E., about one-eighth mile above the crossing of the stage road to Andrews and 13 miles northeast of Denio.

Records available.—March 27 to December 31.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—Probably permanent; bed composed of bowlders and stones.

Discharge measurements.—Made by wading.

Accuracy.—Results are good, although it is possible that some fluctuations in stage have occurred which have not been shown by the rather infrequent gage readings.

Cooperation.—Station maintained in cooperation with Thomas & Walter, proprietors of the Trout Creek ranch.

The results show the amount of water available in this stream for irrigation.

Discharge measurements of Little Cottonwood Creek near Denio, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 27	R. W. Davenport	0.72	5.1
Apr. 4	.....do	.92	9.7
13	.....do	.77	6.1
17	.....do	.77	6.3
Aug. 14	.....do	.08	*a*.1

a Estimated.

Daily gage height, in feet, and discharge, in second-feet, of Little Cottonwood Creek near Denio, Oreg., for 1911.

Day.	March.		April.		May.		June.		July.		August.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	.....	9	.....	11	.....	8	.....	0.8	.....	0.4
2	.....	.....	0.90	9	1.00	12	.....	8	0.20	.4	.....	.4
3	.....	.....	.90	9	.....	15	0.87	8	.....	.5	.....	.4
4	.....	.....	.90	9	1.15	18	.....	8	.....	.5	.....	.4
5	.....	.....	.....	9	.....	14	.....	8	.25	.6	.....	.4
6	.....	.....	.....	8	.95	10	.....	7	.....	.6	0.20	.4
7	.....	.....	.85	8	.....	10	.80	7	.....	.6	.....	.3
8	.....	.....	.90	9	.....	9	.....	6	.25	.6	.....	.1
9	.....	.....	.....	9	.90	9	.70	5	.....	.5	.....	.0
10	.....	.....	.....	8	.....	9	.....	5	.....	5	.....	.0

Daily gage height, in feet, and discharge, in second-feet, of Little Cottonwood Creek near Denio, Oreg., for 1911—Continued.

Day.	March.		April.		May.		June.		July.		August.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
11	.....	.....	0.85	8	0.95	10	0.75	6	0.20	0.4	.....	0.0
12	.....	.....	.80	7	.....	9	.....	6	.....	.4	.....	.0
13	.....	.....	.80	7	.90	9	.....	5	.....	.3	.....	.1
14	.....	.....	.....	7	.....	8	.....	5	.....	.3	0.08	.1
15	.....	.....	.75	6	.80	7	.68	5	.15	3	.....	.....
16	.....	.....	.75	6	.....	7	.....	5	.....	.6	.....	.....
17	.....	.....	.75	6	.....	6	.70	5	.....	1.0	.....	.....
18	.....	.....	.....	6	.....	6	.....	5	.....	1.3	.....	.....
19	.....	.....	.....	7	.70	5	.....	4	.....	1.6	.....	.....
20	.....	.....	.80	7	.....	6	.58	3	.50	2.0	.....	.....
21	.....	.....	.....	8	.....	6	.....	2	.....	1.7	.....	.....
22	.....	.....	.85	8	.....	7	.55	2	.40	1.5	.....	.....
23	.....	.....	.....	10	.85	8	.....	3	.....	1.2	.....	.....
24	.....	.....	1.00	12	.....	8	.60	3	.....	1.0	.....	.....
25	.....	.....	.....	22	.....	7	.....	3	.....	.7	.....	.....
26	.....	.....	1.50	32	.80	7	.....	3	.20	.4	.....	.....
27	0.75	6	.....	24	.....	7	.....	2	.....	.4	.....	.....
28	.70	5	.....	17	.....	7	.50	2	.....	.3	.....	.....
29	.80	7	.95	10	.80	7	.....	1.6	.15	.3	.....	.....
30	.85	8	.....	10	.....	7	.....	1.2	.....	.3	.....	.....
31	.....	8	.....	.....	.....	7	.....	.....	.20	.4	.....	.....

NOTE.—Probably no flow from about Aug. 8 to Dec. 31, 1911. Discharge determined from a rating curve well defined between 5 and 10 second-feet.

Monthly discharge of Little Cottonwood Creek at Denio, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 27–31	8	5	6.8	67	C.
April	32	7	10.2	607	B.
May	18	5	8.6	529	B.
June	8	1.2	4.73	281	C.
July	2	.3	.71	44	D.
August	.4	.0	.10	6	D.
The period	.....	.....	.....	1,530	

TUMTUM LAKE BASIN.

VAN HORN CREEK NEAR DENIO, OREG.

Location.—In sec. 26, T. 40 S., R. 35 E., just below the road crossing 3½ miles north of Denio.

Records available.—March 28, 1911, to June 9, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel.—Shifts somewhat; bed composed of sand and gravel; dry practically all the summer.

Discharge measurements.—Made by wading near gage.

Diversions.—Two ditches, each of which is said to carry sufficient water to irrigate about 20 acres, divert water above the station.

Cooperation.—Station maintained in cooperation with Thomas & Walter, proprietors of the Trout Creek ranch.

Discharge measurements of Van Horn Creek near Denio, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-feet.*
Mar. 28	R. W. Davenport	1.02	9.3
31	do	1.01	13.1
Apr. 6	do	.97	9.0
8	do	1.00	12.0
13[a]	do	.92	8.0
18[a]	do	.90	6.7
Aug. 13	do	.35	.0

[a] About 1.5 second-feet diverted above gage.

Daily gage height, in feet, and discharge, in second-feet, of Van Horn Creek near Denio, Oreg., for 1911.

[H. W. McAllister, observer.]

Day.	March.		April.		May.		June.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1			1.10	17		2		
2			1.00	14		2		
3				12		1	0.35	0
4				11		1		
5				10		1		
6			.97	9		1		
7				10		1		
8			1.00	12		0		
9				12			.30	0
10				12				
11			1.00	12				
12				10				
13			.92	8				
14				8				
15				8				
16				8				
17				7				
18			.90	7				
19				7				
20			.90	7	0.30	0		
21				7	.35	0		
22				6				
23				6				
24				5				
25				5				
26				4				
27				4				
28	1.02	9		3				
29		10		3				
30		12		2				
31	1.01	13						

NOTE.—Daily discharge determined by the indirect method for shifting channels and by estimating.

Monthly discharge of Van Horn Creek near Denio, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 28-31	13	9	11	87	D.
April	17	2	8.2	488	D.
May	2	0	.3	18	D.
June	0	0	.0	0	

HOME CREEK NEAR NARROWS, OREG.

Location.—At Home Creek ranch, in sec. 10, T. 35 S., R. 32 E.
Records available.—May 2 to July 30, 1911.
Drainage area.—Not measured.
Channel.—Gravel; probably permanent
Discharge measurements.—Made by wading.
Cooperation.—Station established by the Eastern Oregon Engineering Co. for the William Hanley Co., owner of the Home Creek ranch.

Home Creek drains the southern end of Steens Mountain, including the area known as Smith Flat.[1] The creek flows northwestward and sinks in Catlow Valley southeast of Rock Creek Sink.

Discharge measurements of Home Creek near Narrows, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 21	H. McLain	.....	11.0
May 2	do	2.40	35.9
13	do	2.15	20.4
25	do	2.00	14.0
June 17	do	1.70	5.6
July 14	do	1.55	4.0
Aug. 15	R. W. Davenport	1.50	2.1

Daily gage height, in feet, and discharge, in second-feet, of Home Creek near Narrows, Oreg., for 1911.

Day.	May.		June.		July.		Day.	May.		June.		July.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	.....	.....	.....	2.5	16	2.1	18	.....	.....	1.4	1.5
2	.....	.....	.....	.....	1.5	2.5	17	2.1	18	.....	.....	.....	1.5
3	.....	.....	.....	.....	.....	2.7	18	2.1	18	.....	.....	.....	1.5
4	.....	.....	.....	.....	.....	2.9	19	2.1	18	.....	.....	.....	1.5
5	2.8	75	.....	.....	.....	3.1	20	2.1	18	.....	.....	.....	1.5
6	2.4	36	.....	.....	.....	3.3	21	2.1	18	.....	.....	.....	1.5
7	2.4	36	.....	.....	.....	3.6	22	2.1	18	.....	.....	.....	1.5
8	2.3	29	.....	.....	.....	3.8	23	2.1	18	.....	.....	1.4	1.5
9	2.2	23	.....	.....	1.6	4.0	24	2.1	18	.....	.....	.....	1.4
10	2.2	23	.....	.....	.....	3.6	25	2.0	14	.....	.....	.....	1.4
11	2.4	36	.....	.....	.....	3.3	26	2.0	14	.....	.....	.....	1.3
12	2.2	23	.....	.....	.....	3.0	27	2.0	14	.....	.....	.....	1.2
13	2.2	23	.....	.....	.....	2.7	28	2.0	14	.....	.....	.....	1.2
14	2.2	23	.....	.....	.....	2.3	29	2.0	14	.....	.....	.....	1.1
15	2.1	18	.....	.....	.....	1.9	30	2.0	14	.....	.....	1.3	1.0
							31	.....	.....	.....	.....	.....	1.0

Monthly discharge of Home Creek near Narrows, Oreg., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
May 5–30	*75	14	22.7	1,170	B.
July	4	1	2.15	132	D.

[1] On Pl. III of Water-Supply Paper 231 the drainage of Smith Flat is indicated as passing to the head of Donner und Blitzen River, whereas it actually passes into Home Creek.

MISCELLANEOUS MEASUREMENTS.

The following miscellaneous discharge measurements were made on streams in the Great Basin during 1911:

Miscellaneous discharge measurements made in Great Basin in 1911.

[By G. H. Canfield, L. Crandall, H. S. Kleinschmidt, and J. J. Hayes.]

Bear River basin.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Aug. 14	Bear River		Just above power house, Collinston, Utah.		68
14	West Side canal		do		384
14	East Side canal		do		354
July 14	Seaman's ditch		Near Battle Creek bridge, N. W. of Preston, Idaho.		1.03
14	West Cache canal		Near Battle Creek Fill, N. W. of Preston, Idaho.		26.0
Aug. 15	do		do		53.5

Sevier River basin.

June 24	South Fork	Sevier River	Junction, Utah	2.20	222
July 7	do	do	do	1.60	161
23	do	do	do	1.34	149
29	do	do	do	2.58	265
Aug. 5	do	do	do	.70	99
12	do	do	do	−.30	37
19	do	do	do	−.10	60
June 1	Asay Creek	do	Hatchtown, Utah	2.80	215
4	do	do	do	2.70	195
2	Mammoth Creek	do	do	2.00	331
3	do	do	do	[a] 1.90	322
Aug. 30	Asay Creek	do	do	1.95	79
31	Mammoth Creek	do	do	−.05	28.4

Owens River basin.

Jan. 25[b]	Rock Creek	Owens River	Below junction of Pine Creek, sec. 10, T. 6 S., R. 31 E.		59
24	South diversion of Bishop Creek.	do	Opposite California-Nevada Power Co.'s power house.		2.1
23	Division Creek	do	Former U. S. Geological Survey gaging station, about 10 miles north of Independence, Cal., secs. 4 and 5, T. 12 S., R. 34 E.		6.2
Feb. 1	do	do	do		8.6
1	Sawmill Creek	do	Former U. S. Geological Survey gaging station, about 8 miles north of Independence, Cal., sec. 9, T. 12 S., R. 34 E.		9.0
Jan. 12	North Branch of Shepard Creek.	do	Former U. S. Geological Survey gaging station, 3 miles east of mouth of canyon, just above irrigation diversions.		2.5
12	South Branch of Shepard Creek.	do	do		2.2
Feb. 23[c]	do	do	do		1.8
Jan. 12	Bairs Creek	do	Former U. S. Geological Survey gaging station, 3 miles east of mouth of canyon, sec. 16, T. 14 S., R. 35 E.		1.2
Feb. 23	do	do	do		.9
Jan. 12	George Creek	do	Former U. S. Geological Survey gaging station, 1 mile west of road from Independence to Lone Pine, Cal., sec. 27, T. 14 S., R. 35 E.		2.9
Feb. 23	do	do	do		1.9
Jan. 4	Ash Creek	do	Former U. S. Geological Survey gaging station, near Olancha, Cal., just above forks of creek near mouth of canyon, 16 miles south of Lone Pine, Cal., 8 miles north of Olancha, sec. 11, T. 18 S., R. 36 E.		2.1
Feb. 8	do	do	do		5.8

[a] Gage doubtful. Might be 1.95 feet.

[b] The surplus water over and above that measured in Rock and Pine creeks above the junction (see regular U. S. Geological Survey gaging stations) comes from springs in the canyon.

[c] North Branch of Shepard Creek was dry this date, 9.30 a. m.

Miscellaneous discharge measurements made in Great Basin in 1911—Continued.

Mono Lake basin.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
July 22	Rush Creek	Mono Lake	1 mile south of Farrington post office, Cal., above Parker and Walker creeks.		641
22	Parker Creek [a]	Rush Lake	At road crossing half mile south of Farrington, Cal.		45
23	Walker Creek [a]	do	At road crossing, Farrington, Cal.		11
22	Mill Creek [b]	Mono Lake	Above Lake Canyon, about one-fourth mile above Lundy Lake, at Lundy, Cal.		146
22	Lake Canyon Creek [b]	Mill Creek	At mouth, at Lundy, Cal.		2.8

Carson River basin.

Feb. 22	Carson River	Carson Sink	At Southern Pacific Railroad bridge, 1 mile north of Fort Churchill, Nev.	3.12	444
July 30	Town ditch	Markleeville Creek.	At Markleeville, Cal.		8.3
Nov. 6	do	do	do		4.2
July 30	J. Maisterrena ditch	Pleasant Valley Creek.	do		3.9
30	J. E. Mayo ditch	do	do		8.0

Truckee River basin.

Aug. 5	Alder Creek	Prosser Creek.	Near mouth, about 3½ miles northeast of Truckee, Cal.	0.66	6.7
Sept. 26	do	do	do	.59	4.0

Surprise Valley.

Mar. 25	Bidwell Creek	Upper Lake	Fort Bidwell, Cal.	0.33	11.6
Apr. 30	do	do	do	1.22	39.2
Nov. 3	do	do	do	.28	4.02

Warner Valley.

May 2	Twelvemile Creek	Twentymile Creek.	1 mile west of Oregon, Nevada, and California corner.	1.21	37.6
Aug. 18	do	do	do	.40	2.5
Nov. 17	do	do	do	.39	2.2
May 2	do	do	Near Oregon, Nevada, and California corner.	1.97	62.3
Aug. 18	do	do	do	1.0	3.9
Nov. 17	do	do	do	1.11	4.6
May 1	Cowhead Lake outlet	Twelvemile Creek.	One-fourth mile below lake outlet.	−1.35	21.3
Aug. 18	do	do	do		Dry.
May 2	Fifteenmile Creek	do	Three-fourths mile above mouth.	1.34	16.0
Aug. 18	do	do	do	.49	1.4
Nov. 6	do	do	do	.16	1.07
May 1	Rock Creek	do	4 miles above mouth		6.3
Aug. 18	do	do	At mouth		Dry.
22	Blue Creek	Camas Creek	1 mile above mouth		1.25

[a] In addition to the discharge of Parker and Walker creeks, some 20 second-feet inflow is contributed between the mouth of Walker Creek and regular U. S. Geological Survey gaging station on Rush Creek near Mono Lake.

[b] About 3 second-feet should be added to the combined discharge of Mill Creek and Lake Canyon Creek to give the total flow of Lundy Lake on July 22.

Miscellaneous discharge measurements made in Great Basin in 1911—Continued.

Canals in Warner Valley diverting from Deep Creek.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
June 3	Givens ditch		Adel, Oreg.		3.21
3	Crump ditch		do		.97
Apr. 24	Company ditch		do		15.7
June 3	do		do		10.6
Apr. 24	Wible & Messner ditch		do		2.15
June 3	do		do		7.76
Apr. 24	Wible's ditch		do		.8
June 3	M. C. ditch		do		54.1
Aug. 10	do		do		39.6

Catlow Valley.

Apr. 20	Roaring Springs	Marsh River	Sec. 6, T. 345, R. 32 E., Willamette meridian.		6.05
Aug. 14	Threemile Creek	Marsh in Catlow Valley.	Mouth of canyon above Threemile Springs.		1.90
14	Threemile Springs	Threemile Creek.	One-fourth mile below head		.3
14	Skull Creek	Marsh	Mouth of canyon		.2

Alvord Lake basin.

Apr. 3	Trout Creek	Alvord Lake	One-fourth mile above mouth of Little Trout Creek.		40.0
Mar. 30	Trout Creek and ditches.	do	2½ miles below gaging station		29.7
Apr. 3	Little Trout Creek	Trout Creek	200 feet above mouth		6.5
3	Stony Creek	do	do		6.2
Mar. 27	Little Cottonwood Creek.	do	Near Catlow's, near Denio	1.09	5.7
Apr. 4	do	do	do	1.16	10.0
7	do	do	do	1.12	8.0

Canals diverting from Trout Creek.

Mar. 30	North ditch		At head gate		2.75
30	do		2½ miles below head gate		2.30
30	do		4½ miles below head gate		.5

Tumtum Lake basin.

Apr. 13	Pueblo Creek	Tumtum Lake	Mouth of canyon		0.84
Mar. 31	Big Cottonwood Creek.	do	do		25.7
Apr. 13	Oliver Creek	do	do		.60
13	Thompson Springs	do	Near Denio-Andrews stage road		.28
13	Catlow Creek	do	do		.81
13	Arizona Creek	do	do		.30

Harney Valley.

Apr. 11	Knox Springs	Donner und Blitzen River.	Sec. 22, T. 315, R. 32½ E., Willamette meridian.		1.5
May 23	Smith Creek	do	Smith, Oreg.		1.8

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DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

WATER-SUPPLY PAPER 311

SURFACE WATER SUPPLY OF THE UNITED STATES

1911

PART XI. PACIFIC COAST IN CALIFORNIA

PREPARED UNDER THE DIRECTION OF M. O. LEIGHTON

BY

H. D. McGLASHAN AND R. H. BOLSTER

WASHINGTON
GOVERNMENT PRINTING OFFICE
1912

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SURFACE WATER SUPPLY OF THE PACIFIC COAST IN CALIFORNIA, 1911.

By H. D. McGlashan and R. H. Bolster.

AUTHORITY FOR INVESTIGATIONS.

This volume is Part XI of a series of 12 reports presenting results of measurements of flow made on certain streams in the United States during the calendar year 1911. The reports are listed in the following table:

Papers on surface water supply of the United States, 1911.

Part.[a]	No.	Title.
I	301	North Atlantic coast.
II	302	South Atlantic coast and eastern Gulf of Mexico.
III	303	Ohio River basin.
IV	304	St. Lawrence River basin.
V	305	Upper Mississippi River and Hudson Bay basins.
VI	306	Missouri River basin.
VII	307	Lower Mississippi River basin.
VIII	308	Western Gulf of Mexico.
IX	309	Colorado River basin.
X	310	Great Basin.
XI	311	Pacific coast in California.
XII	312	North Pacific coast.

[a] For the purpose of uniformity in the presentation of reports, a general plan has been agreed upon by the United States Reclamation Service, the United States Forest Service, the United States Weather Bureau, and the United States Geological Survey, according to which the area of the United States has been divided into 12 parts, whose boundaries coincide with natural drainage lines indicated by the parts of the report.

The data presented in these reports were collected by the United States Geological Survey under authority implied in the organic law (20 Stat. L., p. 394), which contains the following paragraph:

Provided, That this officer [the Director] shall have the direction of the geological survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies of water supply for irrigation.

Since the fiscal year ending June 30, 1895, successive sundry civil bills passed by Congress have carried the following item and appropriations:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal year ending June 30—

1895	$12,500
1896	20,000
1897 to 1900, inclusive	50,000
1901 to 1902, inclusive	100,000
1903 to 1906, inclusive	200,000
1907	150,000
1908 to 1910, inclusive	100,000
1911	150,000

In the execution of the work various private and State organizations have cooperated. Acknowledgments for such cooperation is made on page 18, and also in connection with the description of each station affected by the cooperative work.

PUBLICATIONS.

Measurements of stream flow have been made at nearly 2,000 points in the United States and also at many points in small areas in Seward Peninsula and the Yukon-Tanana region, Alaska, and in the Hawaiian Islands. During 1911 gaging stations were maintained by the Survey and the cooperating organizations at about 1,500 points in the United States, and many discharge measurements were made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country, and will be made available in the regular surface water-supply papers from time to time. A complete list of the gaging stations maintained by the Survey to and including 1910 and a list of the papers relating to the water supply of the country has been published by the Survey as Water-Supply Paper 280. An index to the reports containing stream flow measurements prior to 1904 has been published as Water-Supply Paper 119.

Plates I and II show the average run-off and rainfall in the United States as determined from the measurements of stream flow made by the Geological Survey and records of rainfall collected by the Weather Bureau.

For each calendar year there has been prepared a report embodying the stream-flow data collected during that year, which has been published either as a part of the annual report of the Director, as a bulletin, or as a water-supply paper, as shown by the following table:

MAP OF UNITED STATES, SHOWING MEAN ANNUAL PRECIPITATION

Blue lines and figures indicate average annual precipitation in depth in inches

Prepared by Henry Gannett
mainly from data of the
United States Geological Survey
and United States Weather Bureau

MAP OF UNITED STATES, SHOWING MEAN ANNUAL RUN-OFF

Blue lines and figures indicate average annual run-off in depth in inches

ENGRAVED AND PRINTED BY THE U.S. GEOLOGICAL SURVEY

Prepared by Henry Gannett
mainly from data of the
United States Geological Survey

Stream-flow data in reports of the United States Geological Survey.

[A=Annual Report; B=Bulletin; WS=Water-Supply Paper.]

Report.	Character of data.	Year.
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge	1884 to Sept., 1890.
12th A, pt. 2	do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
WS 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896.
WS 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
WS. 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
WS 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898.
WS 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
WS 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
WS 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
WS 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
WS 75	Monthly discharge	1901.
WS 82 to 85	Complete data	1902.
WS 97 to 100	do	1903.
WS 124 to 135	do	1904.
WS 165 to 178	do	1905.
WS 201 to 214	Complete data, except descriptions	1906.
WS 241 to 252	Complete data	1907–8.
WS 261 to 272	do	1909.
WS 281 to 292	do	1910.
WS 301 to 312	do	1911.

NOTE.—No data regarding stream flow are given in the 15th and 17th annual reports.

The table which follows gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1911. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Me., 1903 to 1911, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, and 301, which contain records for the New England streams from 1903 to 1911.

Numbers of water-supply papers containing results of stream measurements, 1899–1911.

	1899 [a]	1900 [b]	1901	1902	1903	1904
North Atlantic coast (St. John River to York River)	35	47, [c] 48	65, 75	82	97	[d] 124, [e] 125, [f] 126
South Atlantic coast and eastern Gulf of Mexico (James River to the Mississippi)	[g] 35, 36	48	65, 75	[g] 82, 83	[g] 97, 98	[f] 126, 127
Ohio River basin	36	48, [h] 49	65, 75	83	98	128
St. Lawrence River and Great Lakes	36	49	65, 75	[i] 82, 83	97	129
Hudson Bay and upper Mississippi River	36	49	[j] 65, 66, 75	[j] 83, 85	[j] 98, 99, 100	[j] 128, 130
Missouri River	[k] 36, 37	49, [l] 50	66, 75	84	99	130, [m] 131
Lower Mississippi River	37	50	[j] 65, 66, 75	[j] 83, 84	[j] 98, 99	[j] 128, 131
Western Gulf of Mexico	37	50	66, 75	84	99	132
Colorado River	[n] 37, 38	50	66, 75	85	100	133
Great Basin	38, [p] 39	51	66, 75	85	100	133, [q] 134
Pacific coast in California	38, [r] 39	51	66, 75	85	100	134
North Pacific coast	38	51	66, 75	85	100	135

	1905	1906	1907–8	1909	1910	1911
North Atlantic coast (St. John River to York River)	[d] 165, [e] 166, [f] 167	[d] 201, [e] 202, [f] 203	241	261	281	301
South Atlantic coast and eastern Gulf of Mexico (James River to the Mississippi)	[f] 167, 168	[f] 203, 204	242	262	282	302
Ohio River basin	169	205	243	263	283	303
St Lawrence River and Great Lakes	170	206	244	264	284	304
Hudson Bay and upper Mississippi River	171	207	245	265	285	305
Missouri River	172	208	246	266	286	306
Lower Mississippi River	[j] 169, 173	[j] 205, 209	247	267	287	307
Western Gulf of Mexico	174	210	248	268	288	308
Colorado River	175, [o] 177	211	249	269	289	309
Great Basin	176, [q] 177	212, [q] 213	250, [q] 251	270, [q] 271	290	310
Pacific coast in California	177	213	251	271	291	311
North Pacific coast	[s] 177, 178	214	252	272	292	312

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39.
[b] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52.
[c] Wissahickon and Schuylkill rivers to James River.
[d] New England rivers only.
[e] Hudson River to Delaware River, inclusive.
[f] Susquehanna River to Yadkin River, inclusive.
[g] James River only.
[h] Scioto River.
[i] Lake Ontario and tributaries to St. Lawrence River proper.
[j] Tributaries of Mississippi from east.
[k] Gallatin River.
[l] Loup and Platte rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[m] Platte and Kansas rivers.
[n] Green and Gunnison rivers and Grand River above junction with Gunnison.
[o] Below junction with Gila.
[p] Mohave River only.
[q] Great Basin in California, excepting Truckee and Carson drainage basins.
[r] Kings and Kern rivers and south Pacific coast drainage basins.
[s] Rogue, Umpqua, and Siletz rivers only.

DEFINITION OF TERMS.

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile; and (2) those which represent the actual quantity of water, as run-off in depth in inches and acre-feet. The units used in this series of reports are second-feet, second-feet per square mile, run-off in inches and acre-feet. They may be defined as follows:

"Second-feet" is an abbreviation for cubic feet per second and is the unit for the rate of discharge of water flowing in a stream 1 foot wide, 1 foot deep, at a rate of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the following table of equivalents.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

An "acre-foot" is equivalent to 43,560 cubic feet, and is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation work.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.

Discharge (second-feet per square mile).	Run-off (depth in inches).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.223
9	.33471	9.372	9.707	10.041	10.376

NOTE.—For partial month multiply the values for one day by the number of days.

Table for converting discharge in second-feet into run-off in acre-feet.

Discharge (second-feet).	Run-off (acre-feet).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	1.983	55.54	57.52	59.50	61.49
2	3.967	111.1	115.0	119.0	123.0
3	5.950	166.6	172.6	178.5	184.5
4	7.934	222.1	230.1	238.0	246.0
5	9.917	277.7	287.6	297.5	307.4
6	11.90	333.2	345.1	357.0	368.9
7	13.88	388.8	402.6	416.5	430.4
8	15.87	444.3	460.2	476.0	491.9
9	17.85	499.8	517.7	535.5	553.4

NOTE.—For partial month multiply values for one day by the number of days.

1 second-foot equals 40 California miner's inches (law of Mar. 23, 1901).
1 second-foot equals 38.4 Colorado miner's inches.
1 second-foot equals 40 Arizona miner's inches.
1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.
1 second-foot for one year covers 1 square mile 1.131 feet or 13.572 inches deep.
1 second-foot for one year equals 31,536,000 cubic feet.
1 second-foot equals about 1 acre-inch per hour.
1 second-foot for one day equals 86,400 cubic feet.
1,000,000,000 (1 United States billion) cubic feet equals 11,570 second-feet for one day.
1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.
1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.
1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.
1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.
100 California miner's inches equals 18.7 United States gallons per second.
100 California miner's inches for one day equals 4.96 acre-feet.
100 Colorado miner's inches equals 2.60 second-feet.
100 Colorado miner's inches equals 19.5 United States gallons per second.
100 Colorado miner's inches for one day equals 5.17 acre-feet.
100 United States gallons per minute equals 0.223 second-feet.
100 United States gallons per minute for one day equals 0.442 acre-foot.
1,000,000 United States gallons per day equals 1.55 second-feet.
1,000,000 United States gallons equals 3.07 acre-feet.
1,000,000 cubic feet equals 22.95 acre-feet.
1 acre-foot equals 325,850 gallons.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0.0737 second-foot per year.
1 foot equals 0.3048 meter.
1 mile equals 1.60935 kilometers.
1 mile equals 5,280 feet.
1 acre equals 0.4047 hectare.
1 acre equals 43,560 square feet.
1 acre equals 209 feet square, nearly.
1 square mile equals 2.59 square kilometers.
1 cubic foot equals 0.0283 cubic meter.
1 cubic foot of water weighs 62.5 pounds.
1 cubic meter per minute equals 0.5886 second-foot.
1 horsepower equals 550 foot-pounds per second.
1 horsepower equals 76.0 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1½ horsepower equals about 1 kilowatt.

To calculate water power quickly: $\frac{\text{Sec.-ft.} \times \text{fall in feet}}{11}$ = net horsepower on water wheel realizing 80 per cent of theoretical power.

EXPLANATION OF DATA.

For each regular current-meter gaging station the following data are given: Description of the station, list of discharge measurements, table of daily gage heights, table of daily discharges, table of monthly and yearly discharges and run-off. For stations located at weirs or dams the gage-height table is omitted.

In addition to statements regarding the location and installation of current-meter stations, the descriptions give information in regard to any conditions which may affect the constancy of the relation of gage height to discharge, covering such points as ice, logging, shifting channels, and backwater; also information regarding diversions which decrease the total flow at the measuring section. Statements are also made regarding the accuracy and reliability of the data.

The table of daily gage-heights records the daily fluctuations of the surface of the river as found from the mean of the gage readings taken each day, usually in the morning and in the evening. The gage height given in the table represents the elevation of the surface of the water above the zero of the gage. All gage heights affected by the presence of ice in the streams or by backwater from obstructions are published as recorded, with suitable footnotes. The rating table is not applicable for such periods unless the proper corrections to the gage heights are known and applied. Attention is called to the fact that the zero of the gage is placed at an arbitrary datum and has no relation to zero flow or the bottom of the river. In general, the zero is located somewhat below the lowest known flow, so that negative readings shall not occur.

The discharge measurements and gage heights are the base data from which rating tables, daily discharge tables, and monthly discharge tables are computed.

The rating table gives, either directly or by interpolation, the discharge in second-feet corresponding to every stage of the river recorded during the period for which it is applicable. It is not published in this report, but can be determined from the tables of daily gage heights and daily discharge, as follows:

First plot the discharge measurements for the current and earlier years on cross-section paper, with gage heights in feet as ordinates and discharge in second-feet as abscissas. Then tabulate a number of gage heights taken from the daily gage-height table for the complete range of stage given and the corresponding discharges for the days selected from the daily discharge table and plot the values on cross-section paper. The last points plotted will define the rating curve used and will lie among the plotted discharge measurements. After drawing the rating curve, a table can be developed by scaling off the discharge in second-feet for each tenth foot of gage height. These values should be so adjusted that the first differences shall always be increasing or constant, except for known backwater periods.

The table of daily discharges gives the discharges in second-feet corresponding to the observed gage heights as determined from the rating tables.

In the table of monthly discharge the column headed "Maximum" gives the mean flow, as determined from the rating table, for the day when the mean gage height was highest. As the gage height is the mean for the day, it does not indicate correctly the stage when the water surface was at crest height and the corresponding discharge was consequently larger than given in the maximum column. Likewise in the column at "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet for each second during the month. On this the computations for the remaining columns, which are defined on page 13, are based.

The field methods used in the collection of the data presented in this series of reports are described in the introductory sections of Water-Supply Papers 261 to 272, inclusive, "Surface water supply of the United States, 1909." Plate III shows typical gaging stations, indicating the method of suspending the current meter; Plate IV shows current meters [1] used in the work.

ACCURACY AND RELIABILITY OF FIELD DATA AND COMPARATIVE RESULTS.

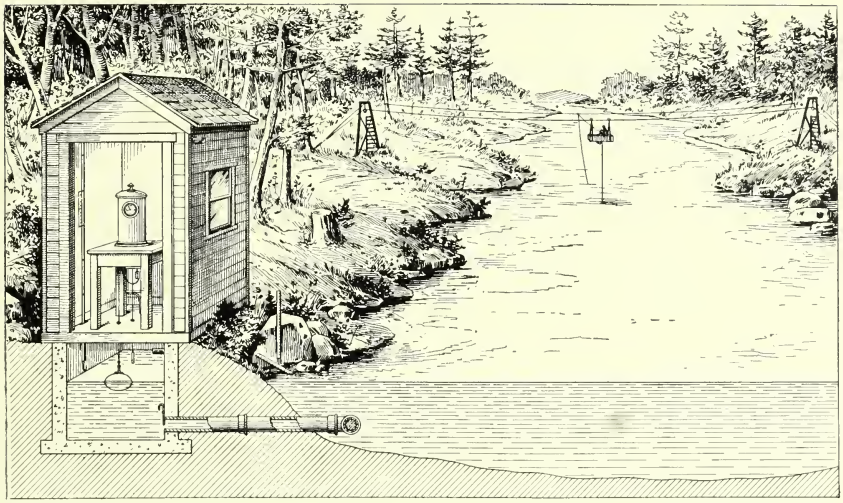
The accuracy of stream-flow data depends primarily on the natural conditions at the gaging station and on the methods and care with which the data are collected. Errors of the first group depend on the degree of permanency of channel and of permanency of the relation between discharge and stage.

Errors of the second class are due, first, to errors in observation of stage; second, to errors in measurements of flow; and, third, to errors due to misinterpretation of stage and flow data.

In order to give engineers and others information regarding the probable accuracy of the computed results, footnotes are added to the daily discharge tables, stating the probable accuracy of the rating tables used, and an accuracy column is inserted in the monthly discharge table. For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined" or "approximate" within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The accuracy column in the monthly discharge table does not apply to the maximum or minimum nor to any individual day, but to the monthly mean. It is based on the accuracy of the rating, the probable reliability of the observer, and knowledge of local conditions.

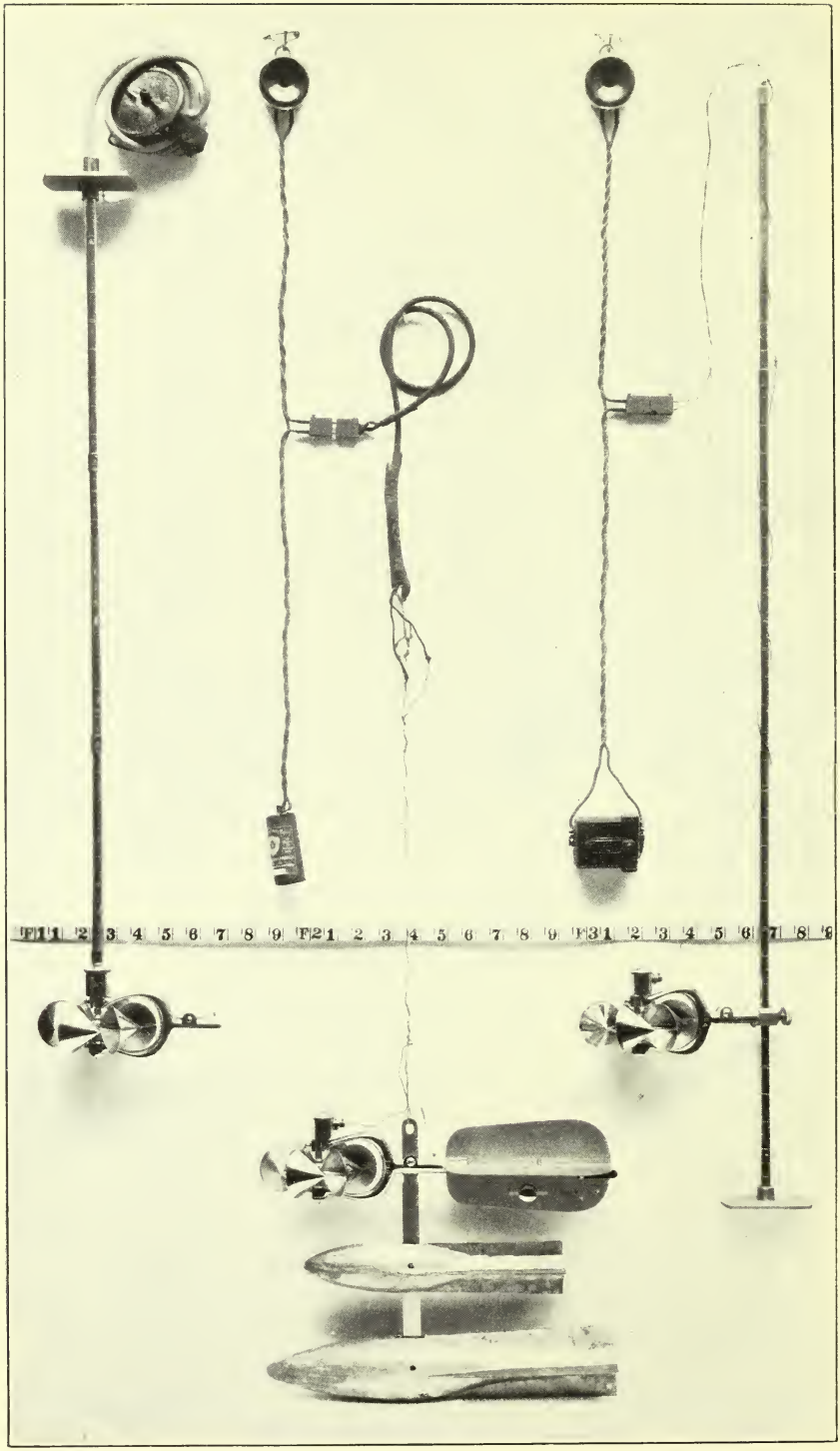
[1] See Hoyt, J. C., and others, Use and care of current meter as practiced by the United States Geological Survey: Trans. Am. Soc. Civil Eng., vol. 66, 1910, p. 70.



A. CABLE STATION WITH AUTOMATIC GAGE.

B. FOR BRIDGE MEASUREMENT.

TYPICAL GAGING STATIONS.



SMALL PRICE CURRENT METERS.

In this column, A indicates that the mean monthly flow is probably accurate within 5 per cent; B, within 10 per cent; C, within 15 per cent; D, within 25 per cent. Special conditions are covered by footnotes.

Even though the monthly means for any station may represent with a high degree of accuracy the quantity of water flowing past the gage, the figures showing discharge per square mile and depth of run-off in inches may be subject to gross errors which result from including in the measured drainage area large noncontributing districts or omitting estimates of water diverted for irrigation or other use, and they should, therefore, be considered as only approximate, particularly for periods of irrigation or of low water. For these errors it is as a rule not feasible to make adequate correction.

In general, the base data collected each year by the Survey engineers are published, not only to comply with the law, but also to afford any engineer the means of examining and adjusting to his own needs the results of the computations. The table of monthly discharge is so arranged as to give only a general idea of the flow at the station and should not be used for other than preliminary estimates. The determinations of daily discharge allow more detailed studies of the variation in flow by which the period of deficiency may be determined.

It should be borne in mind that the observations in each succeeding year may be expected to throw new light on data already collected and published, and the engineer who makes use of the figures presented in these papers should verify all ratings and make such adjustments for earlier years as may seem necessary.

COOPERATION AND ACKNOWLEDGMENTS.

The hydrographic work of the United States Geological Survey in California is being carried on in cooperation with the State in accordance with acts of the State legislature, approved March 16, 1903, March 20, 1905, March 11, 1907, and April 22, 1909.

The act of March 16, 1903, which covered the period from July 1, 1903, to June 30, 1905, is in substance as follows:

> The State board of examiners are hereby empowered to enter into contracts with the Director of the United States Geological Survey for the purpose of making topographic maps to the extent of twenty thousand dollars; also for the purpose of gaging streams, surveying reservoir sites and canal locations, for the conservation and utilization of the flood and storm waters of the State, to the extent of fifteen thousand dollars * * *.

The acts of March 20, 1905, and March 11, 1907, are in substance the same as the previous acts, the appropriations being increased to $30,000 for topography and $20,000 for hydrography and covering

the four fiscal years July 1, 1905, to June 30, 1909. The act of April 22, 1909, appropriates $30,000 per annum for cooperation between the State and Federal Government for topography, hydrography, and use and distribution of water for agricultural purposes, this appropriation being made continuous.

The Conservation Commission and the State Board of Control (water powers) of the State of California, in September, 1911, arranged for cooperation with the Water Resources Branch of the United States Geological Survey. This agreement provides for:

First, a complete digest of all available data concerning the flow of the streams in the State of California;

Second, records of streams not hitherto investigated;

Third, surveys of the streams, showing slope, topography, and such other data as may be necessary to determine water-power and storage possibilities along said streams.

The Conservation Commission appropriated $12,500 and the State Board of Control (water powers) $9,000 for this work. The reports containing these data will be published by the Geological Survey. The members of the conservation commission are: George C. Pardee, chairman; Francis Cuttle, and J. P. Baumgartner. The members of the State board of control (water powers) are: Hiram W. Johnson, governor; Charles D. Marx, chairman; S. C. Graham, Harold T. Power, and Nathaniel Ellery, State engineer. L. R. Glavis is secretary for both commissions.

Assistance has been rendered or records furnished by the following, to whom acknowledgment is due: Department of Engineering of the State of California, Nathaniel Ellery, State engineer; Hiram W. Johnson, governor; the United States Reclamation Service; the United States Forest Service, through W. L. Huber, district engineer; the United States Weather Bureau, through N. R. Taylor, local forecaster; the experimental stations, United States Department of Agriculture, through Frank Adams, irrigation manager; the United States Indian Service; the United States Fishery, through G. H. Lambson, superintendent; the Pacific Gas & Electric Co., through James H. Wise, assistant general manager; the Southern California Mountain Water Co., through M. M. O'Shaughnessy, chief engineer; the Ora Electric Co., through J. D. Galloway, consulting engineer; the Los Molinos Land Co., through Thomas H. Means, manager; the Volcan Land & Water Co., through W. S. Post, chief engineer; the Santa Barbara water commission, through Lee M. Hyde, engineer; the Turlock irrigation district, through Burton Smith, chief engineer; the Stone & Webster Engineering Corporation; Duryea, Haehl & Gilman; the Kern County Land Co., through G. K. Warren, engineer; and many other private parties. This cooperation is separately acknowledged in the station descriptions.

DIVISION OF WORK.

The field work in California was carried on under the direction of W. B. Clapp and H. D. McGlashan, by J. E. Stewart, W. V. Hardy, F. C. Ebert, E. O. Christiansen, Lasley Lee, and Forest Service hydrographers—H. J. Tompkins, G. T. Peekema, and F. G. Wood.

The field work in the Klamath River basin in Oregon was carried on under the direction of W. W. Patch, project engineer, United States Reclamation Service, by J. C. Yadon and Leland Moser. The field data have been furnished by the United States Reclamation Service.

The ratings and special estimates were made by H. D. McGlashan, F. F. Henshaw, and R. H. Bolster. The computations were made and the completed data prepared for publication by R. C. Rice, E. S. Fuller, H. D. Padgett, H. J. Dean, A. H. Tuttle, and M. I. Walters.

The entire report was edited by Mrs. B. D. Wood.

SOUTHERN PACIFIC OCEAN DRAINAGE BASINS.

TIA JUANA RIVER BASIN.

COTTONWOOD CREEK NEAR JAMUL, CAL.

Location.—At the Barrett dam site, 6½ miles below intake of Dulzura conduit, in the SW. ¼ sec. 15, T. 17 S., R. 3 E., San Bernardino meridian, about 12 miles southeast of Jamul. Pine Valley Creek enters 1 mile and Lyons Creek one-half mile, respectively, above the station.

Records available.—December 15, 1905, to December 31, 1911.

Drainage area.—Approximately 270 square miles.

Gage.—Two vertical staffs are in use. Upper gage is on left bank near end of dam and indicates depth of water on the crest; lower gage, which is on upstream side of dam between flume and right bank, is read when no water is flowing over crest of dam; its datum is 2.50 feet lower than upper gage. The upper gage was not used during 1911.

Channel.—Shifting sand above dam.

Discharge measurements.—Made at low concrete dam, back of which sand and gravel have been deposited to the level of its crest. At low stages the flow is restricted to a rectangular wooden flume through the wall of the dam, but at high stages the flow is over the entire length of the dam, which is 61 feet. Measurements are made by wading except in high stages, when only float velocities can be obtained.

Diversions and storage.—Dulzura conduit diverts water from Cottonwood and Pine Valley creeks about half a mile above their junction. The Morena reservoir, about 9 miles above the Barrett dam site, has a capacity of 46,000 acre-feet. During 1911, 10,500 acre-feet were impounded at this reservoir.

Accuracy.—No discharge measurements were made during 1911. The range of stage was small and results are considered good.

Cooperation.—Daily discharge for 1911 furnished by the Southern California Mountain Water Co. through M. M. O'Shaughnessy, chief engineer. No daily gage heights were furnished, but daily discharge is stated to have been determined from the rating curve developed by the United States Geological Survey.

Daily discharge, in second-feet, of Cottonwood Creek near Jamul, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.4	3.7	2.2	1.1	1.0	1.7						0.1
2	3.4	2.6	2.2	1.5	1.1	1.7						.1
3	3.4	3.7	3.7	1.4	1.0	1.7						.1
4	2.6	2.8	13	1.4	1.1	1.4						.1
5	2.6	35	7.2	1.4	1.0	1.3						.6
6	2.6	3.7	2.4	1.4	1.0	1.2						.6
7	2.0	3.7	2.0	1.5	1.0	.7						.6
8	2.0	3.7	2.0	1.4	.8	.7						.6
9	2.6	4.6	2.0	1.5	.8	.5						.6
10	11	4.6	3.0	1.4	.8	.4						.9
11	8.6	3.7	5.4	1.1	.8	.2						.9
12	3.1	3.4	2.3	1.1	.8	.2						.9
13	3.1	3.1	2.0	1.1	.8	.2						.9
14	2.8	22	2.0	1.0	1.5	.2						.9
15	3.1	5.9	1.5	1.0	1.0	.2						.9
16	2.6	3.7	1.5	1.0	1.1	.2						.9
17	2.5	3.6	1.4	1.0	.8	.2						1.5
18	2.5	3.1	1.1	1.0	.8	.2						1.5
19	2.3	2.3	1.1	1.0	.7	.2						1.5
20	2.3	3.1	1.1	1.0	.7	.2						1.5
21	2.3	2.5	1.4	1.1	1.3	.2						1.5
22	2.3	2.0	1.4	1.0	1.3	.2						1.5
23	2.3	2.0	1.4	1.1	1.3	.2						1.5
24	2.3	2.0	1.1	1.0	1.0	.2						1.5
25	2.3	1.9	1.1	1.1	.8	.2						1.5
26	2.3	1.5	1.1	1.5	1.0	.2						1.5
27	2.3	2.3	1.1	1.5	.7	.1						1.5
28	2.3	2.6	1.1	1.5	1.3	.0						1.5
29	2.6		1.1	1.0	1.0	.0						1.5
30	2.6		1.1	1.0	1.0	.0						1.5
31	3.7		1.1		1.0							1.5

NOTE.—Creek dry at gage June 28 to Nov. 30. Discharge determined from a fairly well defined rating curve. Table shows amount of water flowing in stream at Barrett dam site below intake of conduit.

Daily discharge, in second-feet, of Cottonwood Creek and Dulzura conduit near Jamul, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	Day.	Jan.	Feb.	Mar.	Apr.
1	3.4	23	26	9.5	16	23.0	46	21	8.0
2	3.4	19	35	22	17	7.1	36	20	8.0
3	3.4	36	46	18	18	19.0	31	18	8.0
4	2.6	68	78	14	19	9.3	28	16	8.0
5	2.6	97	40	11	20	9.3	27	15	8.0
6	2.6	41	26	11	21	6.9	22	15	8.1
7	2.0	24	26	26	22	6.9	15	18	8.0
8	2.0	52	30	18	23	9.3	12	16	6.9
9	2.6	47	35	14	24	15	12	14	6.8
10	11.0	45	62	13	25	6.9	16	14	6.9
11	8.6	41	43	11	26	17	14	14	7.3
12	3.1	36	40	11	27	9.3	37	14	7.3
13	3.1	21	30	11	28	6.9	31	12	7.3
14	2.8	73	26	9.4	29	9.6		12	6.8
15	7.7	54	22	9.4	30	16		9.5	6.8
					31	14		9.5	

NOTE.—Table shows the total flow past the station, including the diversion.
No record of discharge in the flume Jan. 1 to 14 and May to December. Probably a small amount of water in conduit during May. See table of discharge of Cottonwood Creek.

Combined monthly discharge of Cottonwood Creek and Dulzura conduit near Jamul, Cal., for 1911.

Month.	Discharge in second-feet.					Run-off (total in acre-feet).		
	Maximum creek, plus conduit.	Minimum creek, plus conduit.	Mean.			Creek.	Conduit.	Creek, plus conduit.
			Creek.	Conduit.	Creek, plus conduit.			
January	23	2.0	3.09	4.81	7.95	190	296	489
February	97	12	4.96	31.0	35.9	275	1,720	1,990
March	78	9.5	2.33	23.6	25.9	143	1,450	1,590
April	26	6.8	1.20	9.45	10.7	71	562	637
May	1.5	.7	.98	*a*.00	.98	60	*a* 0	60
June	1.7	.0	.49	.00	.49	29	0	29
July to November	.0	.0	.00	.00	.00	0	0	0
December	1.5	.1	1.04	.00	1.04	64	0	64
The year	97	.0	1.15	5.56	6.71	832	4,030	4,860

a See footnote to daily discharge of Dulzura Conduit.

NOTE.—About 10,500 acre-feet were impounded in the Morena reservoir during 1911; hence the total run-off from the Cottonwood drainage during this year was about 15,400 acre-feet.

DULZURA CONDUIT NEAR JAMUL, CAL.

Location.—About 12 miles below intake and 9 miles southeast of Jamul. During 1909 and 1910 station was located 1½ miles below intake.

Records available.—January 1, 1909, to December 31, 1911.

Gage.—Lietz water register at weir.

Discharge.—Computed from gage height record at an 8-foot steel plate weir about 1¼ miles above lower end of conduit.

Accuracy.—Automatic gage is checked twice each day by patrolman. Results are believed to be excellent.

Cooperation.—Daily discharge furnished by Southern California Mountain Water Co. through M. M. O'Shaughnessy, chief engineer.

The Dulzura conduit diverts water from Cottonwood and Pine Valley creeks, about half a mile above their junction, into Dulzura Creek drainage. From the end of the conduit the water flows down the natural channel of Dulzura Creek into the Lower Otay reservoir. The water is used for municipal purposes at San Diego. The conduit is 13.38 miles long and is concrete lined except 4,490 feet of flume and 9,219 feet of tunnel. The average width is about 5 feet and the depth 4 feet 2 inches. The grade is 4 feet in 5,000 and the capacity 40,000,000 gallons in 24 hours. The seepage loss between intake and measuring weir amounts to about 3 per cent.

Daily discharge, in second-feet, of Dulzura conduit near Jamul, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	Day.	Jan.	Feb.	Mar.	Apr.
1	0.0	19.2	24.0	8.4	16	20.0	42.5	19.2	7.0
2	.0	16.3	32.7	20.0	17	4.6	32.7	18.6	7.0
3	.0	32.7	42.5	16.3	18	16.3	28.2	17.0	7.0
4	.0	65.1	65.1	13.0	19	7.0	26.0	14.5	7.0
5	.0	62.1	32.7	9.8	20	7.0	24.0	14.2	7.0
6	.0	37.4	24.0	9.8	21	4.6	20.0	13.5	7.0
7	.0	20.0	24.0	24.0	22	4.6	13.0	16.3	7.0
8	.0	47.9	28.2	16.3	23	7.0	9.8	14.5	5.8
9	.0	42.5	32.7	13.0	24	13.0	9.8	13.2	5.8
10	.0	40.5	59.2	11.4	25	4.6	14.2	13.2	5.8
11	.0	37.4	37.4	9.8	26	14.4	13.0	13.0	5.8
12	.0	32.7	37.4	9.8	27	7.0	35.1	12.4	5.8
13	.0	18.1	28.2	9.8	28	4.6	28.2	11.0	5.8
14	.0	50.7	24.0	8.4	29	7.0	.....	10.5	5.8
15	4.6	47.9	20.7	8.4	30	13.0	.....	8.4	5.8
					31	9.9	.....	8.4	.....

NOTE.—Little or no water in the flume Jan. 1 to 14 and June to December. Probably a small amount of water running during May.

For monthly discharge, see table above.

SWEETWATER RIVER BASIN.

SWEETWATER RIVER NEAR DESCANSO, CAL.

Location.—At the Ellis ranch in the SE. ¼ sec. 25, T. 15 S., R. 3 E., San Bernardino meridian, 2 miles below mouth of Guatay Creek and about 1½ miles below Descanso.

Records available.—November 21, 1905, to December 31, 1911.

Drainage area.—40 square miles.

Gage.—Staff in three sections on left bank.

Channel.—Sand and gravel; shifting.

Discharge measurements.—Made from car and cable at gage and by wading.

Diversions.—A small irrigation ditch (capacity, about one-third second-foot) heads about 1,000 feet above the station.

Accuracy.—Results fair.

Discharge measurements of Sweetwater River near Descanso, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 9	W. V. Hardy	3.70	6.1
Mar. 8	do	4.12	24
Apr. 17	do	3.85	4.6
May 8	do	3.77	2.3
Nov. 9	F. C. Ebert	3.58	*a* .7

a Estimated.

NOTE.—Measurements made by wading at various sections in the vicinity of the gage.

Daily gage height, in feet, of Sweetwater River near Descanso, Cal., for 1911.

[Chas. H. Ellis, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.48	4.50	3.96	4.06	.....	3.64	3.51	3.54	3.52	3.54	3.58	3.60
2	3.48	4.15	3.98	4.14	.....	3.62	3.51	3.54	3.52	3.52	3.58	3.60
3	3.48	4.28	4.10	4.07	.....	3.62	3.51	3.53	3.52	3.52	3.58	3.60
4	3.47	4.85	4.85	4.04	.....	3.61	3.51	3.52	3.52	3.53	3.58	3.60
5	3.47	4.85	4.48	4.02	.....	3.61	3.51	3.52	3.52	3.53	3.58	3.60
6	3.47	4.85	4.12	4.02	.....	3.60	3.52	3.52	3.52	3.54	3.58	3.65
7	3.46	4.85	4.08	4.10	.....	3.60	3.52	3.52	3.52	3.54	3.58	3.69
8	3.47	3.72	4.08	4.05	.....	3.60	3.52	3.52	3.52	3.54	3.58	3.65
9	3.48	3.70	4.08	3.96	3.71	3.60	3.53	3.52	3.52	3.54	3.58	3.64
10	4.15	3.70	4.38	3.92	3.71	3.60	3.54	3.52	3.52	3.54	3.58	3.62
11	4.88	3.85	4.29	3.92	3.71	3.59	3.54	3.52	3.50	3.54	3.58	3.62
12	3.77	3.95	4.25	3.91	3.71	3.59	3.54	3.52	3.50	3.54	3.59	3.62
13	3.71	3.98	4.18	3.89	3.71	3.58	3.54	3.52	3.50	3.54	3.60	3.62
14	3.70	4.28	4.02	3.88	3.71	3.57	3.54	3.52	3.50	3.54	3.60	3.62
15	3.74	4.08	3.98	3.88	3.71	3.55	3.54	3.52	3.50	3.54	3.60	3.62
16	3.71	3.86	3.98	3.88	3.71	3.54	3.54	3.52	3.50	3.54	3.60	3.62
17	3.64	3.91	3.98	3.86	3.71	3.54	3.54	3.52	3.50	3.54	3.60	3.68
18	3.61	3.89	3.98	3.86	3.71	3.53	3.54	3.52	3.50	3.54	3.60	3.66
19	3.59	3.86	3.97	3.86	3.71	3.52	3.54	3.51	3.50	3.54	3.60	3.64
20	3.56	3.82	3.98	3.86	3.64	3.51	3.54	3.51	3.50	3.54	3.60	3.64
21	3.54	3.80	4.00	3.86	3.64	3.51	3.54	3.51	3.50	3.54	3.60	3.64
22	3.51	3.79	4.06	3.86	3.62	3.51	3.54	3.51	3.52	3.54	3.60	3.64
23	3.50	3.77	4.06	3.84	3.64	3.51	3.54	3.51	3.52	3.54	3.60	3.64
24	3.48	3.78	4.00	3.82	3.65	3.51	3.54	3.51	3.52	3.54	3.60	3.64
25	3.67	3.85	3.99	3.82	3.66	3.51	3.54	3.51	3.52	3.54	3.60	3.68
26	3.62	3.95	3.99	3.85	3.68	3.51	3.54	3.51	3.52	3.54	3.60	3.66
27	3.58	3.95	3.98	3.87	3.69	3.51	3.60	3.51	3.52	3.62	3.60	3.65
28	3.60	3.15	3.97	3.86	3.69	3.51	3.60	3.51	3.52	3.60	3.60	3.70
29	3.59	.....	3.97	3.86	3.68	3.51	3.54	3.51	3.53	3.60	3.60	3.78
30	3.58	.....	3.96	3.85	3.67	3.51	3.54	3.51	3.56	3.60	3.60	3.71
31	3.58	.....	3.94	.....	3.66	.....	3.54	3.51	.....	3.58	.....	3.68

Daily discharge, in second-feet, of Sweetwater River near Descanso, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.3	107	16	18	4.2	1.1	0.4	0.6	0.5	0.6	0.7	0.8
2	.3	50	17	26	3.8	.9	.4	.6	.5	.5	.7	.8
3	.3	69	26	19	3.4	.9	.4	.5	.5	.5	.7	.8
4	.2	182	146	17	3.1	.9	.4	.5	.5	.5	.7	.8
5	.2	182	76	14	2.8	.9	.4	.5	.5	.5	.7	.8
6	.2	182	28	14	2.5	.8	.5	.5	.5	.6	.7	1.2
7	.2	182	23	22	2.2	.8	.5	.5	.5	.6	.7	1.4
8	.2	8.0	20	17	1.9	.8	.5	.5	.5	.6	.7	1.2
9	.3	6.0	20	10	1.6	.8	.5	.5	.5	.6	.7	1.1
10	31	6.0	55	7.7	1.6	.8	.6	.5	.5	.6	.7	.9
11	168	16	43	7.7	1.6	.8	.6	.5	.4	.6	.7	.9
12	5	26	38	7.1	1.6	.8	.6	.5	.4	.6	.8	.9
13	3.7	29	30	6.1	1.6	.7	.6	.5	.4	.6	.8	.9
14	3.0	68	14	5.7	1.6	.7	.6	.5	.4	.6	.8	.9
15	4.0	41	11	5.7	1.6	.6	.6	.5	.4	.6	.8	.9
16	3.7	14	11	5.7	1.6	.6	.6	.5	.4	.6	.8	.9
17	2.0	18	11	5.0	1.6	.6	.6	.5	.4	.6	.8	1.4
18	1.8	16	11	5.0	1.6	.5	.6	.5	.4	.6	.8	1.2
19	1.6	14	11	5.0	1.6	.5	.6	.4	.4	.6	.8	1.1
20	1.4	11	11	5.0	1.1	.4	.6	.4	.4	.6	.8	1.1
21	1.4	8.0	13	5.0	1.1	.4	.6	.4	.4	.6	.8	1.1
22	1.2	7.0	18	5.0	.9	.4	.6	.4	.5	.6	.8	1.1
23	1.2	6.0	18	4.2	1.1	.4	.6	.4	.5	.6	.8	1.1
24	1.0	7.0	13	3.5	1.2	.4	.6	.4	.5	.6	.8	1.1
25	4.0	10	12	3.5	1.2	.4	.6	.4	.5	.6	.8	1.4
26	2.6	15	12	4.6	1.4	.4	.6	.4	.5	.6	.8	1.2
27	2.0	15	11	5.4	1.4	.4	.8	.4	.5	.9	.8	1.2
28	2.4	.0	11	5.0	1.4	.4	.8	.4	.5	.8	.8	1.5
29	2.2	.....	11	5.0	1.4	.4	.6	.4	.5	.8	.8	2.5
30	2.0	.....	10	4.6	1.3	.4	.6	.4	.6	.8	.8	1.6
31	2.2	.....	8.9	.....	1.2	.....	.6	.4	.....	.7	.....	1.4

NOTE.—Daily discharge determined by the indirect method for shifting channels Jan. 1 to Mar. 7, and a fairly well defined rating curve Mar. 8 to Dec. 31.

Monthly discharge of Sweetwater River near Descanso, Cal., for 1911.

[Drainage area, 40 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	168	0.2	8.05	0.201	0.23	495	C.
February	182	.0	46.2	1.16	1.21	2,570	C.
March	146	8.9	24.4	.610	.70	1,500	C.
April	26	3.5	8.95	.224	.25	533	C.
May	4.2	.9	1.81	.045	.05	111	C.
June	1.1	.4	.63	.016	.02	37.5	C.
July	.8	.4	.57	.014	.02	35.0	C.
August	.6	.4	.46	.012	.01	28.3	C.
September	.6	.4	.47	.012	.01	28.0	C.
October	.9	.5	.62	.016	.02	38.1	C.
November	.8	.7	.76	.019	.02	45.2	C.
December	2.5	.8	1.14	.028	.03	70.1	C.
The year	182	.0	7.58	.190	2.57	5,490	

SAN DIEGO RIVER BASIN.

SAN DIEGO RIVER AT LAKESIDE, CAL.

Location.—On the Elcajon grant, just above ford on Lakeside-Padre Barona Valley road, three-fourths mile above the Cuyamaca & Eastern Railroad bridge, and three-fourths mile north of Lakeside.

Records available.—December 3, 1905, to December 31, 1911.

Drainage area.—208 square miles.

Gage.—Staff in three sections on left bank 100 feet above ford.

Channel.—Shifting sand.

Discharge measurements.—Made from car and cable at gage and by wading.

Diversions.—San Diego flume heads at diverting dam about 1,000 feet below Boulder Creek and about 15 miles above the station. Five pumping plants, 1 to 3 miles above the station, obtain water for irrigation from wells along the banks of the stream. The capacity of these plants ranges from about 0.5 to 2.5 second-feet. Cuyamaca reservoir, on the headwaters of Boulder Creek, has a capacity of 11,410 acre-feet.

Accuracy.—Results are fair.

Discharge measurements of San Diego River at Lakeside, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 10	W. V. Hardy	2.92	18
Mar. 9	do	3.47	108
10	do	3.95	272
11	do	3.60	176
Apr. 18[a]	do	3.10	12
May 9[b]	do	3.03	.7
Oct. 9[c]	F. C. Ebert	.....	.0

[a] Made by wading 150 feet above gage. [b] Made by wading 125 feet above gage. [c] River dry.

Daily gage height, in feet, of San Diego River at Lakeside, Cal., for 1911.

[J. H. Beadle, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	.....	2.79	3.35	3.10	3.10	3.0
2	.....	2.82	3.25	3.40	3.10	3.0
3	.....	2.91	3.20	3.25	3.05	3.0
4	.....	4.15	3.84	3.20	3.04	3.0
5	.....	3.80	3.60	3.18	3.00	3.0
6	.....	3.32	3.46	3.18	3.00	3.0
7	.....	3.23	3.37	3.30	3.00	3.0
8	.....	3.05	3.50	3.40	3.00	3.0
9	.....	3.00	3.50	3.30	3.00	3.0
10	.....	2.92	3.68	3.25	3.02	3.0
11	.....	2.90	3.60	3.20	3.00	3.0
12	.....	2.91	3.50	3.15	3.00	3.0
13	.....	3.05	3.42	3.12	3.00	3.0
14	.....	3.70	3.33	3.12	3.00	3.0
15	.....	3.33	3.32	3.12	3.00	3.0
16	.....	3.29	3.30	3.12	3.04	3.0
17	.....	3.18	3.27	3.10	3.02	3.0
18	.....	3.15	3.25	3.10	3.0	3.0
19	.....	3.10	3.23	3.09	3.0	3.0
20	.....	3.09	3.20	3.08	3.0	3.0
21	.....	3.05	3.20	3.08	3.0	3.0
22	.....	3.01	3.20	3.10	3.0	3.0
23	.....	3.02	3.20	3.10	3.0	3.0
24	.....	3.03	3.19	3.08	3.0	3.0
25	.....	3.07	3.18	3.08	3.0	3.0

Daily gage height, in feet, of San Diego River at Lakeside, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
26	3.00	3.15	3.15	3.06	3.0	3.0
27	2.95	3.12	3.11	3.10	3.0	3.0
28	2.90	3.23	3.12	3.11	3.0	3.0
29	2.90	.....	3.10	3.10	3.0	3.0
30	2.88	.....	3.09	3.10	3.0	3.0
31	2.90	.....	3.10	.....	3.0	.....

NOTE.—River dry Jan. 1 to 25 and July to December. During the latter half of May and June the river derived its supply from a spring above the gage.

Daily discharge, in second-feet, of San Diego River at Lakeside, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	0.0	2	84	17	9	0.2
2	.0	4	56	88	9	.2
3	.0	16	38	44	3	.2
4	.0	655	290	33	2	.2
5	.0	375	167	29	.3	.2
6	.0	123	113	29	.3	.2
7	.0	93	80	57	.3	.2
8	.0	43	120	83	.3	.2
9	.0	32	117	55	.3	.2
10	.0	18	140	43	.5	.2
11	.0	14	176	32	.2	.2
12	.0	16	133	22	.2	.2
13	.0	37	105	16	.2	.2
14	.0	295	75	16	.2	.2
15	.0	116	72	16	.2	.2
16	.0	97	67	16	1.2	.2
17	.0	65	58	12	.4	.2
18	.0	50	52	12	.2	.2
19	.0	40	46	10	.2	.2
20	.0	37	40	8	.2	.2
21	.0	23	40	8	.2	.2
22	.0	18	40	11	.2	.2
23	.0	20	40	11	.2	.2
24	.0	18	35	7	.2	.2
25	.0	24	32	7	.2	.2
26	32	37	27	5	.2	.2
27	22	30	20	10	.2	.2
28	14	56	21	11	.2	.2
29	14	.....	17	10	.2	.2
30	12	.....	15	9	.2	.2
31	14	.....	17	.....	.2	.....

NOTE.—Daily discharge January 26, to May 10 determined by indirect method for shifting channels; discharge May 11 to June 30 estimated.

Monthly discharge of San Diego River at Lakeside, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	32	0	3.5	215	D.
February	655	2	84.1	4,670	C.
March	290	15	75.3	4,630	C.
April	88	5	24.2	1,440	D.
May	9	.2	.98	60.3	D.
June	.2	.2	.20	11.9	D.
July	.0	.0	.0	.0	
August	.0	.0	.0	.0	
September	.0	.0	.0	.0	
October	.0	.0	.0	.0	
November	.0	.0	.0	.0	
December	.0	.0	.0	.0	
The year	655	.0	15.2	11,000	

Combined daily discharge, in second-feet, of San Diego River and flume at Lakeside, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	13	87	27	20	6.4	0.0	7.8	6.4	0.0	0.0	0.0
2	2.7	15	64	96	20	5.8	.0	8.3	6.7	.0	.0	.0
3	2.5	26	41	56	15	3.4	.9	7.8	6.4	.0	.0	.0
4	4.6	660	292	36	12	8.2	7.1	7.1	6.4	.1	.0	.0
5	5.2	380	170	41	12	8.2	7.6	7.4	6.4	.0	.0	.0
6	5.4	134	116	40	9.8	5.6	8.0	7.1	6.0	.1	.0	.0
7	5.6	106	82	67	11	3.6	7.1	7.4	5.6	.0	.0	.0
8	5.6	56	122	93	11	3.0	1.0	2.4	5.4	.0	.0	.0
9	6.4	45	121	67	9.8	2.9	.0	.0	3.2	2.2	.0	.0
10	6.4	31	144	54	9.2	1.4	.0	.0	2.5	.0	.0	.0
11	6.2	26	180	44	8.7	2.9	.0	.0	1.0	.0	.0	.0
12	8.3	26	136	34	8.7	1.2	.0	.0	2.1	.0	.0	.0
13	8.7	47	107	16	8.0	1.5	.0	.9	2.2	.0	.0	.0
14	7.8	306	76	16	7.8	4.1	7.4	6.7	2.7	.0	.0	.0
15	7.6	127	73	29	8.7	5.8	8.5	7.4	3.4	.0	.0	.0
16	9.5	108	72	29	9.7	6.6	7.4	7.8	3.9	.0	.0	.0
17	9.5	74	67	26	8.2	7.8	5.0	8.5	3.9	.0	.0	.0
18	8.7	61	60	27	7.3	7.6	4.8	9.0	3.5	.0	.0	.0
19	6.9	51	53	25	7.1	1.2	4.6	8.5	3.2	.0	.0	.0
20	5.4	48	47	24	5.8	.2	5.8	7.6	2.5	.0	.0	.0
21	4.4	34	47	20	4.6	.2	7.6	5.6	1.3	.0	.0	.0
22	3.9	29	48	23	2.7	.2	8.5	3.0	1.5	.0	.0	.0
23	3.2	30	47	26	4.6	3.0	1.7	1.2	2.0	.0	.0	.0
24	4.2	28	40	22	8.2	7.6	.0	1.3	2.4	.0	.0	.0
25	6.7	32	39	20	8.7	7.8	.0	1.8	.0	.0	.0	.0
26	40	38	34	18	9.2	8.2	.0	3.2	.3	.0	.0	.0
27	32	31	28	23	9.7	8.5	.0	6.7	.1	.0	.0	.0
28	22	59	30	19	9.7	2.0	.0	7.1	.0	.0	.0	.0
29	24	.....	27	21	7.8	.2	1.0	6.9	.3	.0	.0	.7
30	22	.....	26	20	6.0	.2	6.2	5.8	.1	.0	.0	3.0
31	24	.....	28	.....	6.2	.....	7.4	6.7	.....	.0	.....	.4

Combined monthly discharge of San Diego River and flume at Lakeside, Cal., for 1911.

[Drainage area, 208 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	40	2.5	10.1	0.049	0.06	621	C.
February	660	13	93.6	.450	.47	5,200	C.
March	292	26	80.8	.388	.45	4,970	C.
April	96	16	35.3	.170	.19	2,100	C.
May	20	2.7	9.26	.045	.05	569	B.
June	8.5	.2	4.18	.020	.02	249	B.
July	8.5	.0	3.47	.017	.02	213	B.
August	9.0	.0	5.19	.025	.03	319	B.
September	6.7	.0	3.05	.015	.02	181	D.
October	2.2	.0	.08	.00038	.0004	5	D.
November	.0	.0	.00	.00000	.0000	0	
December	3.0	.0	.13	.00062	.0007	8	D.
The year	660	.0	19.9	.096	1.31	14,400	

SAN DIEGO FLUME NEAR LAKESIDE, CAL.

Location.—One-fourth mile above trestle crossing at Los Coches Creek, about 3 miles southeast of Lakeside.

Records available.—January 1, 1907, to December 31, 1911.

Gage.—Depth of water in flume is measured at reference point at patrolman's cabin.

Discharge measurements.—Made in flume at reference point.

Storage and diversions.—The Cuyamaca dam, on the headwaters of Boulder Creek, was built in 1886. It was one of the first earth dams constructed in California for irrigation storage. In 1894 it was enlarged and is now 41½ feet high and 635 feet long. The capacity of this reservoir is 11,400 acre-feet. From Cuyamaca reservoir the water flows down the natural channel of Boulder Creek and San Diego River to the intake of the San Diego flume, a distance of 12½ miles.

Accuracy.—Rating curve is fairly well defined. On account of leakage and diversion for irrigation on the Capitan Grande Indian Reservation, the record does not show the total diversion. Results are good.

Cooperation.—Gage-height record furnished by the Cuyamaca Water Co.

The San Diego flume, which is over 30 miles in length, is 6 feet wide and 16 inches deep and has a capacity of about 16 second-feet. It discharges into La Mesa reservoir, about 8 miles northeast of San Diego. This system supplied the city of San Diego with water until 1906, when the Southern California Mountain Water Co. extended its system to the city. It now supplies water for irrigation for about 6,000 acres. There is considerable loss between intake and gaging station due to leakage in flume. Occasionally water from the South Fork of San Diego River is diverted into this flume. Water is diverted from the San Diego flume above the station for irrigation on the Capitan Grande Indian Reservation.

Discharge measurements of San Diego flume near Lakeside, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 10	V. V. Hardy	0.82	14
Oct. 9	F. C. Ebert	.....	0

Daily gage height, in feet, of San Diego flume near Lakeside, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.30	0.71	0.33	0.66	0.70	0.50	.....	0.57	0.51	.....	.....	.....
2	.31	.72	.58	.60	.72	.47	.....	.59	.52	.....	.....	.....
3	.30	.64	.34	.75	.73	.34	0.16	.57	.51	.....	.....	.....
4	.42	.42	.30	.30	.64	.58	.54	.54	.51	0.03	.....	.....
5	.45	.45	.35	.73	.72	.58	.56	.55	.51	.....	.....	.....
6	.46	.70	.30	.70	.64	.46	.58	.54	.49	.03	.....	.....
7	.47	.78	.27	.66	.70	.35	.54	.55	.47	.....	.....	.....
8	.47	.77	.27	.67	.68	.32	.17	.29	.46	.....	.....	.....
9	.51	.78	.40	.73	.64	.31	.....	.....	.34	.28	.....	.....
10	.51	.78	.41	.71	.61	.20	.....	.....	.30	.....	.....	.....
11	.50	.73	.41	.73	.60	.31	.....	.....	.18	.....	.....	.....
12	.59	.66	.33	.75	.60	.17	.....	.01	.27	.....	.....	.....
13	.61	.66	.30	.01	.57	.21	.....	.16	.28	.01	.....	.....
14	.57	.72	.22	.01	.56	.38	.55	.52	.31	.....	.....	.....
15	.56	.72	.17	.77	.60	.47	.60	.55	.35	.....	.....	.....
16	.64	.70	.46	.79	.60	.51	.55	.57	.38	.....	.....	.....
17	.64	.62	.62	.80	.57	.56	.44	.60	.38	.....	.....	.....
18	.61	.70	.57	.84	.54	.55	.43	.62	.36	.....	.....	.....
19	.53	.70	.55	.86	.53	.18	.42	.60	.34	.....	.....	.....
20	.46	.70	.55	.87	.47	.....	.48	.56	.30	.....	.....	.....
21	.41	.72	.54	.73	.41	.....	.56	.47	.21	.....	.....	.....
22	.38	.70	.58	.75	.30	.....	.60	.33	.22	.....	.....	.....
23	.34	.68	.53	.84	.41	.32	.24	.20	.26	.....	.....	.....
24	.40	.68	.43	.85	.58	.55	.....	.21	.29	.....	.....	.....
25	.52	.58	.52	.78	.60	.56	.....	.25	.....	.....	.....	.....
26	.58	.17	.54	.79	.62	.58	.....	.34	.07	.....	.....	.....
27	.67	.20	.56	.77	.64	.59	.....	.52	.03	.....	.....	.....
28	.60	.33	.61	.59	.64	.25	.....	.54	.....	.....	.....	.....
29	.64	.....	.67	.70	.56	.....	.17	.53	.08	.....	.....	0.14
30	.68	.....	.70	.70	.48	.....	.50	.48	.02	.....	.....	.33
31	.67	.....	.72	.....	.49	.....	.55	.52	.....	.....	.....	.10

NOTE.—No water flowing in flume on days of no gage reading.

Daily discharge, in second-feet, of San Diego flume near Lakeside, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	11.2	3.0	9.9	10.9	6.2	0.0	7.8	6.4	0.0	0.0	0.0
2	2.7	11.4	8.0	8.5	11 4	5.6	.0	8.3	6.7	.0	.0	.0
3	2.5	9.5	3.2	12.2	11.7	3.2	.9	7.8	6.4	.0	.0	.0
4	4.6	4.6	2.5	2.5	9.5	8.0	7.1	7.1	6.4	.1	.0	.0
5	5.2	5.2	3.4	11.7	11.4	8.0	7.6	7.4	6.4	.0	.0	.0
6	5.4	10.9	2.5	10.9	9.5	5.4	8.0	7.1	6.0	.1	.0	.0
7	5.6	13.1	2.1	9.9	10.9	3.4	7.1	7.4	5.6	.0	.0	.0
8	5.6	12.8	2.1	10.2	10.4	2.8	1.0	2.4	5.4	.0	.0	.0
9	6.4	13.1	4.2	11.7	9.5	2.7	.0	.0	3.2	2.2	.0	.0
10	6.4	13.1	4.4	11.2	8.7	1.2	.0	.0	2.5	.0	.0	.0
11	6.2	11.7	4.4	11.7	8.5	2.7	.0	.0	1.0	.0	.0	.0
12	8.3	9.9	3.0	12.2	8.5	1.0	.0	.0	2.1	.0	.0	.0
13	8.7	9.9	2.5	.0	7.8	1.3	.0	.9	2.2	.0	.0	.0
14	7.8	11.4	1.5	.0	7.6	3.9	7.4	6.7	2.7	.0	.0	.0
15	7.6	11.4	1.0	12.8	8.5	5.6	8.5	7.4	3.4	.0	.0	.0
16	9.5	10.9	5.4	13.3	8.5	6.4	7.4	7.8	3.9	.0	.0	.0
17	9.5	9.0	9.0	13.6	7.8	7.6	5.0	8.5	3.9	.0	.0	.0
18	8.7	10.9	7.8	14.8	7.1	7.4	4.8	9.0	3.5	.0	.0	.0
19	6.9	10.9	7.4	15.3	6.9	1.0	4.6	8.5	3.2	.0	.0	.0
20	5.4	10.9	7.4	15.6	5.6	.0	5.8	7.6	2.5	.0	.0	.0
21	4.4	11.4	7.1	11.7	4.4	.0	7.6	5.6	1.3	.0	.0	.0
22	3.9	10.9	8.0	12.2	2.5	.0	8.5	3.0	1.5	.0	.0	.0
23	3.2	10.4	6.9	14.8	4.4	2.8	1.7	1.2	2.0	.0	.0	.0
24	4.2	10.4	4.8	15.0	8.0	7.4	.0	1.3	2.4	.0	.0	.0
25	6.7	8.0	6.7	13.1	8.5	7.6	.0	1.8	.0	.0	.0	.0
26	8.0	1.0	7.1	13.3	9.0	8.0	.0	3.2	.3	.0	.0	.0
27	10.2	1.2	7.6	12.8	9.5	8.3	.0	6.7	.1	.0	.0	.0
28	8.5	3.0	8.7	8.3	9.5	1.8	.0	7.1	.0	.0	.0	.0
29	9.5	.....	10.2	10.9	7.6	.0	1.0	6.9	.3	.0	.0	.7
30	10.4	.....	10.9	10.9	5.8	.0	6.2	5.8	.1	.0	.0	3.0
31	10.2	.....	11.4	.....	6.0	.....	7.4	6.7	.....	.0	.....	.4

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of San Diego flume near Lakeside, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	10.4	2.5	6.60	406	B.
February	13.1	1.0	9.58	532	A.
March	11.4	1.0	5.62	346	B.
April	15.6	.0	11.0	655	A.
May	11.7	2.5	8.25	507	A.
June	8.3	.0	3.98	237	B.
July	8.5	.0	3.47	213	B.
August	9.0	.0	5.19	319	B.
September	6.7	.0	3.05	181	D.
October	2.2	.0	.08	5	D.
November	.0	.0	.00	0	
December	3.0	.0	.13	8	D.
The year	15.6	.0	4.71	3,410	

SAN DIEGUITO RIVER BASIN.

SANTA YSABEL CREEK NEAR ESCONDIDO, CAL.

Location.—At the mouth of the canyon at the upper end of San Pasqual Valley, in the SW. ¼ sec. 31, T. 12 S., R. 1 E., San Bernardino meridian, and about 9 miles southeast of Escondido. Roden Canyon Creek enters 1½ miles above and Santa Maria Creek 4 miles below the station.

Records available.—December 17, 1905, to December 31, 1911.
Drainage area.—128 square miles.
Gage.—Inclined staff on left bank.
Channel.—Shifting sand.
Discharge measurements.—Made from car and cable at gage, and by wading.
Accuracy.—No change in conditions of flow April to December, 1911. Results are good.
Cooperation.—Maintained in cooperation with Volcan Land & Water Co.

Discharge measurements of Santa Ysabel Creek near Escondido, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 7	W. V. Hardy	0.80	59
Mar. 5	do	.87	140
Apr. 11	do	.48	48
May 10	do	.25	17
June 26	do	.10	2.4
Oct. 15	F. C. Ebert	.06	*a*.2

a Estimated. Water sinks into the sand 100 feet below gage.

NOTE.—Measurements made by wading at various sections in the vicinity of the gage.

Daily gage height, in feet, of Santa Ysabel Creek near Escondido, Cal., for 1911.

[E. R. Harris, observer.]

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		0.35	0.23	0.10					0.10
2		.30	.21	.10					.10
3		.31	.24	.09					.10
4		.32	25	.10					.11
5		.25	.20	.09					.11
6		.26	.20	.07					.17
7		.27	.18	.03					.20
8		.27	.19	.02					.18
9		.25	.15						.15
10		.25	.17						.11
11	0.48	.25	.19						.12
12	.50	.26	.19						.10
13	.47	.27	.16					0.08	.09
14	.40	.25	.15					.09	.09
15	.45	.28	.14				0.06	.10	.10
16	.39	.26	.17					.10	.11
17	.38	.22	.18					.11	.12
18	.40	.20	.15					.10	.12
19	.40	.25	.16					.09	.10
20	.39	.18	.16					.15	.10
21	.37	.19	.19					.15	.11
22	.40	.18	.20					.14	.20
23	.39	.20	.13					.12	.21
24	.39	.25	.14					.10	.19
25	.37	.23	.11					.10	.17
26	.37	.22	.12					.10	.15
27	.40	.20	.10					.09	.15
28	.40	.20	.11					.08	.16
29	.40	.22	.10					.05	.20
30	.37	.25	.10					.08	.21
31		.23							.19

NOTE.—Gage not read Jan. 1 to Apr. 10. Creek dry July 7 to about Oct. 14. Gage not read July 9 to Nov. 12, but observer's notes indicate that there was flow during first part of November and probably the latter half of October.

Daily discharge, in second-feet, of Santa Ysabel Creek near Escondido, Cal., for 1911.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		29	14	2.4					2.4
2		22	12	2.4					2.4
3		23	15	1.9					2.4
4		25	16	2.4					3.2
5		16	10	1.9					3.2
6		17	10	1.0					8.1
7		19	8.9	.0					10
8		19	9.7	.0					8.9
9		16	6.4	.0					6.4
10		16	8.1						3.2
11	49	16	9.7						4.0
12	52	17	9.7						2.4
13	47	19	7.3					1.4	1.9
14	36	16	6.4					1.9	1.9
15	44	20	5.6				0.2	2.4	2.4
16	35	17	8.1					2.4	3.2
7	33	13	8.9					3.2	4.0
18	36	10	6.4					2.4	4.0
19	36	16	7.3					1.9	2.4
20	35	8.9	7.3					6.4	2.4
21	32	9.7	9.7					6.4	3.2
22	36	8.9	10					5.6	10
23	35	10	4.8					4.0	12
24	35	16	5.6					2.4	9.7
25	32	14	3.2					2.4	8.1
26	32	13	4.0					2.4	6.4
27	36	10	2.4					1.9	6.4
28	36	10	3.2					1.4	7.3
29	36	13	2.4					.0	10
30	32	16	2.4					1.4	12
31		14							9.7

NOTE—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Santa Ysabel Creek near Escondido, Cal., for 1911.

[Drainage area, 128 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
April 11–30	52	32	37.2	0.291	0.22	1,480	B.
May	29	8.9	15.8	.123	.14	972	B.
June	16	2.4	7.82	.061	.07	465	B.
July	2.4	.0	.39	.0030	.004	24	D.
August	.0	.0	.00	.0000	.000	.0	
September	.0	.0	.00	.0000	.000	.0	
October		.0	.032	.0003	.000	2.0	D.
November	6.4	.0	2.06	.016	.02	123	C.
December	12	1.9	5.60	.044	.05	344	B.
The period						3,410	

NOTE.—Daily discharge Oct. 16–31, estimated, 0.05 second-foot; Nov. 1–12, estimated, 1 second-foot.

SAN LUIS REY RIVER BASIN.

SAN LUIS REY RIVER NEAR MESA GRANDE, CAL.

Location.—At concrete weir in the NE. ¼ sec. 9, T. 11 S., R. 2 E., San Bernardino meridian, 1 mile below Warner dam site, and about 5 miles north of Mesa Grande.
Records available.—October 3 to December 31, 1911.

Drainage area.—208 square miles.

Channel.—Sand and gravel and somewhat shifting. Weir acts as control for gage.

Discharge measurements.—Made from car and cable about 1 mile above gage and by wading.

Accuracy.—Frequent measurements are secured and results are good.

Cooperation.—Maintained in cooperation with Volcan Land & Water Co. through W. S. Post, engineer.

Discharge measurements of San Luis Rey River near Mesa Grande, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 11	F. C. Ebert	0.09	1.8
11	H. L. Davis	.09	1.7
Dec. 13	do	.11	2.2
20	do	.21	2.4
22	do	.12	2.6
22	do	.12	2.4
29	do	.50	20

NOTE.—All measurements made by wading below weir.

Daily gage height, in feet, and discharge, in second-feet, of San Luis Rey River near Mesa Grande, Cal., for 1911.

Day.	October.		November.		December.		Day.	October.		November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	1.8	0.10	1.8	0.07	1.6	16	0.09	1.7	0.08	1.7	0.10	1.8
2	.....	1.8	.08	1.7	.06	1.6	17	.09	1.7	.08	1.7	.26	3.9
3	0.10	1.8	.08	1.7	.07	1.6	18	.09	1.7	.07	1.6	.26	3.9
4	.09	1.7	.07	1.6	.08	1.7	19	.10	1.8	.06	1.6	.23	3.2
5	.10	1.8	.07	1.6	.10	1.8	20	.10	1.8	.07	1.6	.21	2.8
6	.10	1.8	.06	1.6	.10	1.8	21	.09	1.7	.07	1.6	.24	3.4
7	.11	1.9	.09	1.7	.16	2.3	22	.10	1.8	.08	1.7	.12	2.0
8	.09	1.7	.09	1.7	.13	2.0	23	.12	2.0	.08	1.7	.13	2.0
9	.09	1.7	.10	1.8	.12	2.0	24	.12	2.0	.09	1.7	.16	2.3
10	.09	1.7	.09	1.7	.10	1.8	25	.12	2.0	.09	1.7	.13	2.0
11	.09	1.7	.09	1.7	.11	1.9	26	.13	2.0	.09	1.7	.10	1.8
12	.09	1.7	.07	1.6	.11	1.9	27	.18	2.4	.09	1.7	.10	1.8
13	.09	1.7	.08	1.7	.11	1.9	28	.16	2.3	.08	1.7	.20	2.6
14	.09	1.7	.10	1.8	.10	1.8	29	.09	1.7	.08	1.7	.45	15.00
15	.09	1.7	.09	1.7	.10	1.8	30	.09	1.7	.07	1.6	.29	4.5
							31	.09	1.7	.....	.....	.27	4.1

NOTE.—Daily discharge determined from a fairly well defined rating curve.

Monthly discharge of San Luis Rey River near Mesa Grande, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maxiumm.	Minimum.	Mean.		
October	2.4	1.7	1.81	111	C.
November	1.8	1.6	1.68	100	C.
December	15	1.6	2.73	168	C.

SAN LUIS REY RIVER NEAR PALA, CAL.

Location.—At ford on road to Sickler's mill, in the NW. ¼ sec. 31, T. 9 S., R. 1 W., San Bernardino meridian, about 4 miles southeast of Pala.

Records available.—October 9, 1903 to June 30, 1911.

Drainage area.—318 square miles.

Gage.—Staff in two sections on left bank. The gage datum was lowered 4.66 feet on November 13, 1906.

Channel.—Sand, gravel, and bowlders; shifting.

Discharge measurements.—Made from car and cable 75 feet below gage and by wading.

Diversions and storage.—Water is diverted for irrigation on the Rincon Indian Reservation. The Escondido Mutual Water Co. diverts water from San Luis Rey River about 10 miles above the station. This water, which is stored at the Escondido reservoir, about 6 miles northeast of Escondido, is used for irrigation and municipal purposes at Escondido and vicinity. The capacity of the reservoir is 3,120 acre-feet. A small ditch diverts water from Pauma Creek for irrigation on the Pauma Indian Reservation. A small ditch 1 mile above the station supplies water for irrigation on the Sickler ranch.

Accuracy.—Results fair.

Cooperation.—Maintained in cooperation with Volcan Land & Water Co.

Discharge measurements of San Luis Rey River near Pala, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 5	W. V. Hardy	7.50	266
6	do	7.20	200
Mar. 6	do	7.20	161
Apr. 12[a]	do	6.30	43
May 11[a]	do	5.77	9.9
June 27[a]	do	5.72	6.3
Oct. 14[a]	F. C. Ebert	5.70	5.8

[a] Made by wading at various sections in the vicinity of the gage.

Daily gage height, in feet, and discharge, in second-feet, of San Luis Rey River near Pala, Cal., for 1911.

[Louis Salmons, observer.]

Day.	January.		February.		March.		April.		May.		June.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	5	6.23	29	6.90	146	.....	80	5.96	18	5.81	10
2	.....	5	6.45	49	6.85	138	.....	300	5.90	15	5.82	11
3	.....	5	6.65	72	7.20	200	.....	150	5.88	14	5.79	9.6
4	.....	5	9.25	1,130	8.69	778	.....	100	5.91	16	5.80	10
5	.....	5	7.65	308	7.65	262	.....	90	5.88	14	5.80	10
6	.....	5	7.20	200	7.20	161	.....	90	5.88	14	5.79	9.6
7	.....	5	.....	140	.....	140	.....	170	5.88	14	5.73	7.2
8	.....	5	.....	100	.....	140	.....	280	5.87	14	5.73	7.2
9	.....	5	.....	75	.....	160	.....	160	5.86	13	5.70	6
10	7.20	158	.....	65	.....	350	.....	100	5.86	13	5.71	6.4
11	7.70	274	.....	60	8.80	805	.....	65	5.85	12	5.72	6.8
12	8.00	375	.....	70	.....	400	6.30	43	5.85	12	5.69	5.7
13	.....	150	.....	80	7.20	161	6.30	43	5.85	12	5.70	6
14	.....	30	7.25	210	.....	150	6.24	38	5.88	14	5.71	6.4
15	.....	45	.....	200	.....	140	6.21	35	5.87	14	5.68	5.4

Daily gage height, in feet, and discharge, in second-feet, of San Luis Rey River near Pala, Cal., for 1911—Continued.

Day.	January.		February.		March.		April.		May.		June.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
16	.....	45	7.10	181	7.05	135	6.23	37	5.85	12	5.68	5.4
17	.....	30	.....	170	.....	130	6.21	35	5.85	12	5.66	4.8
18	.....	20	.....	160	.....	125	6.18	33	5.83	12	5.65	4.5
19	.....	10	.....	160	6.95	120	6.15	30	5.78	9.2	5.67	5.1
20	.....	10	.....	150	.....	115	6.15	30	5.71	6.4	5.68	5.4
21	.....	10	.....	140	.....	110	6.18	33	5.69	5.7	5.68	5.4
22	.....	10	.....	170	.....	110	6.19	33	5.72	6.8	5.70	6
23	.....	10	8.20	510	.....	105	6.17	32	5.75	8	5.68	5.4
24	.....	10	7.55	280	.....	105	6.13	29	5.75	8	5.70	6
25	.....	10	.....	170	.....	100	6.12	28	5.75	8	5.70	6
26	.....	140	.....	145	.....	95	6.80	98	5.76	8.4	5.70	6
27	.....	60	6.90	146	.....	90	6.60	74	5.76	8.4	5.70	6
28	.....	30	7.28	216	.....	90	6.50	63	5.74	7.6	5.72	6.8
29	.....	30	.....	.....	.....	85	6.01	21	5.77	8.8	5.71	6.4
30	.....	25	.....	.....	.....	85	5.99	20	5.78	9.2	5.70	6
31	.....	25	.....	.....	.....	80	.....	.....	5.81	10	.....	.....

NOTE.—Daily discharge determined from three fairly well-defined rating curves applicable Jan. 1 to Feb. 4, Feb. 5 to Mar. 4, and Mar. 5 to Dec. 31. Daily discharge for days on which gage was not read determined by means of hydrograph comparison with discharge of Santa Ana River near Mentone, San Diego River at Lakeside, and Sweetwater River at Descanso. These values are only very rough approximations.

Monthly discharge of San Luis Rey River near Pala, Cal., for 1911.

[Drainage area, 318 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	375	5	50.1	0.158	0.18	3,080	D.
February	1,130	29	192	.604	.63	10,700	C.
March	805	80	187	.588	.68	11,500	C.
April	300	20	78.0	.245	.27	4,640	C.
May	18	5.7	11.3	.036	.04	695	C.
June	11	4.5	6.75	.021	.02	402	C.
The period	.....	.....	.....	.....	.....	31,000	

SANTA ANA RIVER BASIN.

SANTA ANA RIVER NEAR MENTONE, CAL.

Location.—Just above road crossing opposite Warm Springs Canyon, in the SW. ¼ SW. ¼ sec. 34, T. 1 N., R. 2 W., San Bernardino meridian, three-fourths of a mile below intake of Pacific Light & Power Co.'s canal, about 2 miles above the mouth of the canyon, and 5 miles northeast of Mentone.

Records available.—July 1, 1896, to December 31, 1911.

Drainage area.—182 square miles.

Gage.—Vertical staff on right bank about 100 feet above ford. The present gage was installed February 25, 1910. Previous to this date various gages were used. The original datum has not been maintained.

Channel.—Gravel and bowlders; will shift during high water.

Discharge measurements.—The flood of January, 1910, destroyed the car and cable. This equipment has not been replaced as it is difficult to reach the station at high water. Measurements are made by wading at medium and low stages.

Artificial control.—Southern California Edison Co.'s power plants Nos. 1 and 2 are located 5¼ and 2¾ miles, respectively, above the Mentone plant at the mouth of the canyon. The intake of the Pacific Light & Power Co.'s canal is at plant No. 2. The tail race from this plant discharges into the canal.

Diversions.—The Green Spot pipe line diverts water from the forebay at the Mentone power house. Water is stored on Bear Creek at Bear Valley reservoir.

Accuracy.—Results are good, except at extreme high stages.

Discharge measurements of Santa Ana River near Mentone, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 17	W. V. Hardy	2.28	104
21	do	2.01	76
Apr. 8	do	3.68	162
22	do	3.43	96
May 25	do	3.15	49
June 26	H. D. McGlashan	2.94	21
Aug. 29	F. C. Ebert	2.53	1.7

NOTE.—Measurements made by wading at various sections in the vicinity of the gage.

Daily gage height, in feet, of Santa Ana River near Mentone, Cal., for 1911.

[R. B. Richardson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.1	2.8	2.1	3.9	3.4	3.0	2.9	2.5	2.5	2.6	2.5	2.5
2	1.1	2.6	2.1	3.9	3.4	3.0	2.9	2.5	2.5	2.5	2.5	2.5
3	1.1	2.4	2.1	3.9	3.4	3.0	2.9	2.5	2.5	2.5	2.5	2.5
4	1.1	3.4	3.2	3.9	3.4	3.0	2.9	2.5	2.5	2.5	2.5	2.5
5	1.1	2.9	2.6	3.9	3.4	3.0	2.8	2.5	2.5	2.5	2.5	2.5
6	1.1	2.6	2.5	3.8	3.4	3.0	2.8	2.5	2.5	2.5	2.5	2.5
7	1.1	2.5	2.5	3.8	3.4	3.0	2.8	2.5	2.5	2.5	2.5	2.5
8	1.1	2.5	3.2	3.7	3.3	3.0	2.8	2.5	2.5	2.5	2.5	2.5
9	1.1	2.4	4.0	3.6	3.3	3.0	2.8	2.5	2.5	2.5	2.5	2.5
10	2.7	2.3	5.0	3.6	3.2	3.0	2.7	2.5	2.5	2.5	2.5	2.5
11	1.9	2.2	4.9	3.7	3.1	3.6	2.7	2.5	2.5	2.5	2.5	2.5
12	1.4	2.2	4.7	3.7	3.1	3.0	2.7	2.5	2.5	2.5	2.5	2.5
13	1.0	2.2	4.5	3.6	3.1	3.0	2.7	2.5	2.5	2.5	2.5	2.5
14	1.0	2.6	4.3	3.6	3.1	3.0	2.7	2.5	2.5	2.5	2.5	2.5
15	2.0	2.6	4.3	3.6	3.3	3.0	2.7	2.5	2.5	2.5	2.5	2.5
16	1.9	2.6	4.2	3.6	3.2	3.0	2.8	2.5	2.5	2.5	2.5	2.5
17	1.6	2.2	4.1	3.5	3.2	3.0	3.0	2.5	2.5	2.5	2.5	2.5
18	1.1	2.1	4.1	3.5	3.2	3.0	2.9	2.5	2.5	2.5	2.5	2.5
19	1.0	2.1	4.1	3.5	3.1	3.0	2.9	2.5	2.5	2.5	2.5	2.5
20	.9	2.1	4.0	3.4	3.1	3.0	2.8	2.5	2.5	2.5	2.5	2.5
21	.9	2.0	3.9	3.4	3.1	3.0	3.4	2.5	2.5	2.5	2.5	2.5
22	.9	2.0	3.9	3.4	3.1	3.0	3.4	2.5	2.5	2.5	2.5	2.5
23	.9	2.1	3.9	3.4	3.1	3.0	3.5	2.5	2.5	2.5	2.5	2.5
24	.9	2.1	3.9	3.4	3.1	3.0	3.5	2.5	2.5	2.5	2.5	2.5
25	2.3	2.0	3.9	3.4	3.1	3.0	3.5	2.5	2.5	2.5	2.5	2.5
26	2.4	2.0	3.9	3.4	3.1	2.9	3.5	2.5	2.5	2.5	2.5	2.5
27	1.6	2.1	3.9	3.4	3.1	2.9	3.0	2.5	2.5	2.5	2.5	2.5
28	1.2	2.1	3.9	3.4	3.1	2.9	2.8	2.5	2.5	2.5	2.5	2.5
29	4.5	.....	3.9	3.4	3.1	2.9	2.5	2.5	2.9	2.5	2.5	2.5
30	2.8	.....	3.9	3.4	3.1	2.9	2.5	2.5	2.9	2.5	2.5	2.5
31	2.6	.....	3.9	.....	3.0	.....	2.5	2.5	.....	2.5	.....	2.5

Daily discharge, in second-feet, of Santa Ana River near Mentone, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3	193	86	240	89	29	19	1	1	3	1	1
2	3	158	86	240	89	29	19	1	1	1	1	1
3	3	127	86	240	89	29	19	1	1	1	1	1
4	3	360	290	240	89	29	19	1	1	1	1	1
5	3	213	158	240	89	29	12	1	1	1	1	1
6	3	158	142	202	89	29	12	1	1	1	1	1
7	3	142	142	202	89	29	12	1	1	1	1	1
8	3	142	290	168	71	29	12	1	1	1	1	1
9	3	127	690	137	71	29	12	1	1	1	1	1
10	175	113	1,840	137	55	29	7	1	1	1	1	1
11	62	99	1,400	168	41	137	7	1	1	1	1	1
12	16	99	900	168	41	29	7	1	1	1	1	1
13	1	99	570	137	41	29	7	1	1	1	1	1
14	1	158	435	137	41	29	7	1	1	1	1	1
15	74	158	435	137	71	29	7	1	1	1	1	1
16	62	158	375	137	55	29	12	1	1	1	1	1
17	32	99	325	111	55	29	29	1	1	1	1	1
18	3	86	325	111	55	29	19	1	1	1	1	1
19	1	86	325	111	41	29	19	1	1	1	1	1
20	0	86	280	89	41	29	12	1	1	1	1	1
21	0	74	240	89	41	29	89	1	1	1	1	1
22	0	74	240	89	41	29	89	1	1	1	1	1
23	0	86	240	89	41	29	111	1	1	1	1	1
24	0	86	240	89	41	29	111	1	1	1	1	1
25	113	74	240	89	41	29	111	1	1	1	1	1
26	127	74	240	89	41	19	111	1	1	1	1	1
27	32	86	240	89	41	19	29	1	1	1	1	1
28	6	86	240	89	41	19	12	1	1	1	1	1
29	1,160	.....	240	89	41	19	1	1	19	1	1	1
30	193	.....	240	89	41	19	1	1	19	1	1	1
31	158	.....	240	.....	29	.....	1	1	.....	1	.....	1

NOTE.—Daily discharge determined from two rating curves well defined below about 200 second-feet and applicable Jan. 1 to Mar. 10 and Mar. 13 to Dec. 31. Discharge Mar. 11 and Mar. 12 estimated.

Monthly discharge of Santa Ana River near Mentone, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	1,160	0	72.4	4,450	C.
February	360	74	125	6,940	A.
March	1,840	86	381	23,400	B.
April	240	89	141	8,390	A.
May	89	29	56.2	3,460	A.
June	137	19	30.9	1,840	B.
July	111	1	30.2	1,860	B.
August	1	1	1.0	62	D.
September	19	1	2.2	131	D.
October	3	1	1.1	68	D.
November	1	1	1.0	60	D.
December	1	1	1.0	62	D.
The year	1,840	0	70.1	50,700	

PACIFIC LIGHT & POWER CO.'S CANAL[1] AND GREENSPOT PIPE LINE NEAR MENTONE, CAL.

Location.—At tail race of Pacific Light & Power Co.'s plant at mouth of canyon, about 3 miles northeast of Mentone.

Records available.—1896 to December 31, 1911.

Gage.—Hook gage at weir about 300 feet west of power house.

[1] Formerly known as Mentone Power Co.'s canal.

Discharge.—Computed from gage heights which give head on 10-foot rectangular weir.

Diversions.—The Greenspot pipe line diverts from the forebay. This water must be added to give total flow of canal. The pipe line was put in operation September 7 and discharges are recorded in miner's inches.

Accuracy.—Results are excellent.

Combined daily discharge, in second-feet, of Santa Ana River and Pacific Light & Power Co.'s canal, including Greenspot pipe line, near Mentone, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	44	261	158	313	159	103	96	65	61	79	52	45
2	45	230	158	313	160	103	95	71	66	63	50	47
3	43	198	158	313	161	103	95	67	66	60	50	39
4	43	431	362	313	161	103	95	66	58	59	55	49
5	44	284	231	312	163	101	86	66	58	57	55	46
6	44	229	215	275	163	101	88	66	58	55	52	48
7	44	213	214	275	163	101	86	65	60	55	50	47
8	43	213	362	239	145	102	86	64	62	51	50	48
9	43	199	761	209	145	101	88	63	62	52	51	48
10	248	185	1,900	210	129	101	83	61	62	53	51	48
11	130	172	1,470	241	115	137	83	66	66	52	61	42
12	84	171	972	241	115	107	83	67	66	64	52	48
13	59	171	642	209	115	105	83	67	67	66	51	46
14	56	231	508	210	115	105	80	67	67	66	51	44
15	146	230	507	208	145	106	81	67	71	64	50	46
16	133	230	448	207	129	106	86	67	69	66	50	45
17	90	171	397	182	131	106	105	66	70	66	50	46
18	74	158	398	183	129	103	93	66	66	68	50	48
19	65	159	398	182	115	106	95	59	70	63	50	48
20	62	159	353	161	114	106	88	60	64	65	51	46
21	59	146	312	161	115	106	89	60	60	62	50	46
22	57	146	312	160	115	105	89	59	59	60	47	46
23	55	159	312	161	115	105	111	58	59	59	48	46
24	62	158	313	160	115	106	111	60	58	55	50	46
25	186	146	313	159	115	106	111	63	57	61	48	47
26	127	146	313	160	115	96	111	67	65	64	48	45
27	103	158	313	160	114	95	73	67	70	72	48	45
28	76	158	313	160	113	95	78	67	73	58	48	46
29	1,220	.....	313	160	114	96	73	67	92	57	48	51
30	263	.....	313	160	115	96	67	63	91	55	48	47
31	230	.....	313	.....	103	.....	71	61	.....	52	.....	47

NOTE.—No water in canal on following days: Jan. 26, break in flume; June 11, plant shut down to repair flume; July 21–26, water turned out of canal to connect up No. 2 tunnel.

Combined monthly discharge of Santa Ana River and Pacific Light & Power Co.'s canal, including Greenspot pipe line, near Mentone, Cal., for 1911.

[Drainage area, 182 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	1,220	43	128	0.703	0.81	7,870	B.
February	431	146	197	1.08	1.12	10,900	A.
March	1,900	158	453	2.49	2.87	27,900	B.
April	313	159	213	1.17	1.30	12,700	A.
May	163	103	130	.714	.82	7,990	A.
June	137	95	104	.571	.64	6,190	A.
July	111	67	89.0	.489	.56	5,470	A.
August	71	58	64.5	.354	.41	3,970	A.
September	92	57	65.8	.362	.40	3,920	A.
October	79	51	60.6	.333	.38	3,730	A.
November	61	47	50.5	.277	.31	3,000	A.
December	51	39	46.3	.254	.29	2,850	A.
The year	1,900	39	133	.731	9.91	96,500	

Daily discharge, in second-feet, of Pacific Light & Power Co.'s canal near Mentone, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	41	68	72	73	70	74	77	64	60	70	51	38
2	42	72	72	73	71	74	76	70	65	56	49	41
3	40	71	72	73	72	74	76	66	65	59	49	33
4	40	71	72	73	72	74	76	65	57	58	54	44
5	41	71	73	72	74	72	74	65	57	56	54	41
6	41	71	73	73	74	72	76	65	57	54	50	43
7	41	71	72	73	74	72	74	64	58	54	42	46
8	40	71	72	71	74	73	74	63	59	50	42	44
9	40	72	71	72	74	72	76	62	59	50	43	44
10	73	72	60	73	74	72	76	60	59	50	43	44
11	68	73	73	73	74	0	76	65	63	45	54	39
12	68	72	72	73	74	78	76	66	65	57	45	44
13	58	72	72	72	74	76	76	66	66	58	44	43
14	55	73	73	73	74	76	73	66	66	59	44	41
15	72	72	72	71	74	77	74	66	70	56	43	42
16	71	72	73	70	74	77	74	66	68	59	43	41
17	58	72	72	71	76	77	76	65	68	58	49	41
18	71	72	73	72	74	74	74	65	63	65	49	43
19	64	73	73	71	74	77	76	58	60	59	49	43
20	62	73	73	72	73	77	76	59	55	63	50	41
21	59	72	72	72	74	77	0	59	58	60	49	45
22	57	72	72	71	74	76	0	58	57	59	46	45
23	55	73	72	72	74	76	0	57	57	58	40	45
24	62	72	73	71	74	77	0	59	57	54	42	45
25	73	72	73	70	74	77	0	62	56	60	40	45
26	0	72	73	71	74	77	0	66	55	63	40	43
27	71	72	73	71	73	76	44	66	60	71	40	43
28	70	72	73	71	72	76	66	66	63	57	40	43
29	58	.....	73	71	73	77	72	66	66	56	40	48
30	70	.....	73	71	74	77	66	62	65	54	40	43
31	72	.....	73	.....	74	.....	70	60	.....	51	.....	43

NOTE.—On Sept. 7 the Greenspot pipe line began diverting water at the head gates. See footnote to combined daily discharge.

Monthly discharge of Pacific Light & Power Co.'s canal near Mentone, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	73	0	55.9	3,440	A.
February	73	68	71.8	3,990	A.
March	73	60	72.1	4,430	A.
April	73	70	71.8	4,270	A.
May	76	70	73.5	4,520	A.
June	78	0	72.8	4,330	A.
July	77	0	58.8	3,620	A.
August	70	57	63.5	3,900	A.
September	70	54	61.1	3,640	A.
October	71	45	57.4	3,530	A.
November	54	40	45.5	2,710	A.
December	48	33	42.7	2,630	A.
The year	78	0	62.2	45,000	

Daily discharge, in second-feet, of Greenspot pipe line near Mentone, Cal., for 1911.

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	6.0	0.0	6.0	16	0.0	6.5	6.0	3.0
2	.....	6.0	.0	5.0	17	1.0	7.5	.0	3.5
3	.....	.0	.0	5.0	18	2.0	1.5	.0	3.5
4	.....	.0	.0	4.0	19	9.0	3.0	.0	3.5
5	.....	.0	.0	4.0	20	7.5	1.0	.0	3.5
6	.....	.0	.5	4.0	21	.5	1.0	.0	.0
7	1.3	.0	7.0	.0	22	.6	.0	.0	.0
8	1.6	.0	7.0	2.5	23	.6	.0	7.3	.0
9	1.6	1.0	7.0	2.5	24	.5	.4	7.3	.0
10	1.6	2.3	7.0	2.5	25	.0	.0	7.3	.8
11	1.8	6.5	6.0	2.5	26	9.1	.0	7.3	1.0
12	.0	6.5	6.0	2.5	27	9.0	.0	7.3	1.0
13	.0	6.5	6.0	2.5	28	9.0	.0	7.3	2.0
14	.0	6.5	6.0	2.5	29	7.0	.0	7.3	2.0
15	.0	6.5	6.0	3.0	30	7.0	.0	7.3	3.0
					31	.....	.0	.....	3.0

Monthly discharge of Greenspot pipe line near Mentone, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
September 7–30	9.1	0	2.95	140
October	7.5	0	2.22	136
November	7.3	0	4.10	244
December	6.0	0	2.53	156

WATERMAN CANYON CREEK NEAR SAN BERNARDINO, CAL.

Location.—Just above old toll bridge at mouth of canyon in the SW. ¼ SW. ¼ sec. 2, T. 1 N., R. 4 W., San Bernardino meridian, about 6 miles north of San Bernardino.

Records available.—November 2 to December 31, 1911.

Drainage area.—4.55 square miles.

Gage.—Vertical staff fastened to an alder tree on left bank about 300 feet above bridge.

Channel.—Bowlders and gravel; will shift at high stages.

Discharge measurements.—Made from foot plank 15 feet below gage and by wading.

Accuracy.—Results are fair.

The area drained by Waterman Canyon Creek was almost entirely burned over by a forest fire July 25 to August 4, 1911.

The following discharge measurement was made by F. C. Ebert by wading 100 feet below the gage:

November 2, 1911: Gage height, 1.62 feet; discharge, 1.8 second-feet.

Daily gage height, in feet, and discharge, in second-feet, of Waterman Canyon Creek near San Bernardino, Cal., for 1911.

[H. E. Mastin, observer.]

Day.	November.		December.		Day.	November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
1	.....	1.7	1.76	2.9	16	1.72	2.4	1.71	2.3
2	1.61	1.7	1.77	3.0	17	1.73	2.5	1.77	3.0
3	1.63	1.8	1.77	3.0	18	1.74	2.6	1.77	3.0
4	1.63	1.8	1.77	3.0	19	1.74	2.6	1.74	2.6
5	1.66	2.0	1.73	2.5	20	1.73	2.5	1.74	2.6
6	1.63	1.8	1.73	2.5	21	1.74	2.6	1.74	2.6
7	.....	1.9	1.81	3.5	22	1.74	2.6	1.76	2.9
8	1.66	2.0	1.79	3.2	23	1.74	2.6	1.77	3.0
9	1.67	2.0	1.77	3.0	24	1.74	2.6	1.76	2.9
10	1.67	2.0	1.77	3.0	25	1.74	2.6	1.76	2.9
11	1.72	2.4	1.73	2.5	26	1.74	2.6	1.76	2.9
12	1.69	2.1	1.71	2.3	27	1.74	2.6	1.76	2.9
13	1.69	2.1	1.71	2.3	28	1.74	2.6	1.79	3.2
14	1.69	2.1	1.72	2.4	29	1.76	2.9	1.79	3.2
15	1.69	2.1	1.72	2.4	30	1.76	2.9	1.81	3.5
					31	.....	.....	1.79	3.2

NOTE.—Daily discharge determined from a fairly well-defined rating curve. Discharge Nov. 1 estimated. Discharge Nov. 7 interpolated.

Monthly discharge of Waterman Canyon Creek near San Bernardino, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
November	2.9	1.7	2.29	136	B.
December	3.5	2.3	2.85	175	B.

DEVIL CANYON CREEK NEAR SAN BERNARDINO, CAL.

Location.—At mouth of canyon, in the SE. ¼ NE. ¼ sec. 6, T. 1 N., R. 4 W., San Bernardino meridian, about 200 feet below ford, about 7 miles northwest of San Bernardino.

Records available.—November 1 to December 8, 1911.

Drainage area.—6.16 square miles.

Gage.—Vertical staff fastened to an alder tree on left bank about 200 feet below ford.

Channel.—Bowlders and gravel.

Discharge measurements.—Made from foot plank about 75 feet below gage and by wading.

Accuracy.—Results are good.

Cooperation.—Gage-height record furnished by United States Forest Service.

The area drained by Devil Canyon Creek is similar in all respects to that tributary to Waterman Canyon except that it retains its forest cover.

The following discharge measurement was made by F. C. Ebert by wading 300 feet above gage:

November 1, 1911: Gage height, 1.48 feet; discharge, 2.1 second-feet.

Daily gage height, in feet, and discharge, in second-feet, of Devil Canyon Creek near San Bernardino, Cal., for 1911.

[O. H. McElfresh, observer.]

Day.	November.		December.		Day.	November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.		Gage height.	Discharge.	Gage height.	Discharge.
1	1.46	2.0	1.53	2.4	16	1.50	2.2	.....	.....
2	1.47	2.1	1.53	2.4	17	1.50	2.2	.....	.....
3	1.48	2.1	1.52	2.3	18	1.49	2.2	.....	.....
4	1.49	2.2	1.56	2.6	19	1.49	2.2	.....	.....
5	1.49	2.2	1.54	2.4	20	1.50	2.2	.....	.....
6	1.49	2.2	1.62	3.0	21	1.52	2.3	.....	.....
7	1.50	2.2	1.61	2.9	22	1.54	2.4	.....	.....
8	1.51	2.3	1.59	2.7	23	1.54	2.4	.....	.....
9	1.52	2.3	.....	.....	24	1.57	2.6	.....	.....
10	1.69	3.8	.....	.....	25	1.56	2.6	.....	.....
11	1.56	2.6	.....	.....	26	1.54	2.4	.....	.....
12	1.52	2.3	.....	.....	27	1.54	2.4	.....	.....
13	1.52	2.3	.....	.....	28	1.55	2.5	.....	.....
14	1.52	2.3	.....	.....	29	1.55	2.5	.....	.....
15	1.50	2.2	.....	.....	30	1.54	2.4	.....	.....

NOTE.—Daily discharge determined from a fairly well-defined rating curve.

Monthly discharge of Devil Canyon Creek near San Bernardino, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
November	3.8	2.0	2.35	140	B.
December 1–8	3.0	2.3	2.59	41.1	B.

SAN GABRIEL RIVER BASIN.

SAN GABRIEL RIVER NEAR AZUSA, CAL.

Location.—Just above road crossing at mouth of canyon, in the NW. ¼ sec. 23, T. 1 N., R. 10 W., San Bernardino meridian, about one-fourth mile above Pacific Light & Power Co.'s power house, and 2 miles north of Azusa.

Records available.—1894 to December 31, 1911.

Drainage area.—222 square miles.

Gage.—Staff in five sections, beneath cable, just above ford; three vertical sections on posts in channel, one inclined and one vertical section bolted to rocks on left bank.

Channel.—Gravel and bowlders; will shift at high stages.

Discharge measurements.—Made from car and cable at gage and by wading.

Diversions.—The power canal of the Pacific Light & Power Co. heads about 5 miles above the station and diverts water past it. In addition there are several small irrigation ditches that divert water above the station.

Accuracy.—On account of change in channel results are only fair.

Discharge measurements of San Gabriel River near Azusa, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 14[a]	W. V. Hardy	4.12	503
18	do	3.90	371
Mar. 14	do	5.52	2,110
23	do	5.10	963
Apr. 16	do	4.60	580
21[a]	do	4.20	350
May 16[b]	do	4.10	214
June 2[c]	do	3.90	121
22[d]	do	3.70	76
Nov. 4	Ebert and Lee	.....	0

[a] Made by wading directly beneath cable at gage section.
[b] San Gabriel River Water Co.'s canal diverted for irrigation about 10 second-feet above gage by a temporary dam under construction.
[c] San Gabriel River Water Co.'s canal diverted 6.2 second-feet.
[d] San Gabriel River Water Co.'s canal diverted 15 second-feet.

Daily gage height, in feet, of San Gabriel River near Azusa, Cal., for 1911.

[H. E. Ward and L. A. Petersen, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	5.0	3.7	4.7	4.1	3.9	3.4	2.8	.....	3.1	.....	.....
2	.....	4.5	3.7	4.8	4.1	3.8	3.4	.....	.....	2.8	.....	.....
3	.....	4.7	4.2	4.8	4.1	3.8	3.4	.....	.....	.....	.....	.....
4	.....	6.0	5.6	4.7	4.1	3.8	3.4	.....	.....	.....	.....	.....
5	.....	5.4	5.2	4.6	4.1	3.7	3.4	.....	.....	.....	.....	.....
6	.....	4.9	5.0	4.6	4.1	3.7	3.4	.....	.....	.....	.....	.....
7	.....	4.6	5.0	4.6	4.1	3.7	3.3	.....	.....	.....	.....	.....
8	.....	4.4	6.2	4.5	4.1	3.7	3.3	.....	.....	.....	.....	.....
9	.....	4.5	8.05	4.5	4.1	3.7	3.3	.....	.....	.....	.....	.....
10	4.5	4.3	8.6	4.4	4.1	3.6	3.3	.....	.....	.....	.....	.....
11	3.5	4.3	6.7	4.4	4.1	3.6	3.3	.....	.....	.....	.....	.....
12	2.9	4.3	6.2	4.4	4.1	3.6	3.3	.....	.....	.....	.....	.....
13	2.5	4.3	5.6	4.4	4.0	3.6	3.3	.....	.....	.....	.....	.....
14	2.1	4.3	5.5	4.4	4.3	3.6	3.2	.....	.....	.....	.....	.....
15	4.8	4.2	5.4	4.3	4.1	3.5	3.2	.....	.....	.....	.....	.....
16	3.9	4.1	5.4	4.3	4.1	3.5	3.2	.....	.....	.....	.....	.....
17	3.4	4.0	5.3	4.3	4.1	3.5	3.2	.....	.....	.....	.....	.....
18	3.1	3.9	5.3	4.3	4.1	3.5	3.2	.....	.....	.....	.....	.....
19	2.9	3.8	5.3	4.3	4.0	3.5	3.2	.....	.....	.....	.....	.....
20	2.8	3.7	5.2	4.2	4.0	3.5	3.2	.....	.....	.....	.....	.....
21	2.7	3.7	5.2	4.2	4.2	3.5	3.2	.....	.....	.....	.....	.....
22	2.6	3.6	5.1	4.2	4.0	3.5	3.2	.....	.....	.....	.....	.....
23	2.5	3.6	5.1	4.2	4.0	3.5	3.2	.....	.....	.....	.....	.....
24	2.4	3.5	5.0	4.2	3.9	3.4	3.1	.....	.....	.....	.....	.....
25	4.5	3.5	5.0	4.2	3.9	3.4	3.1	.....	.....	.....	.....	.....
26	4.0	3.5	4.9	4.2	3.9	3.4	3.0	.....	.....	.....	.....	.....
27	3.7	3.7	4.9	4.2	3.9	3.4	3.0	.....	.....	.....	.....	.....
28	3.6	3.7	4.8	4.2	3.9	3.4	2.9	.....	.....	.....	.....	.....
29	7.0	.....	4.8	4.1	3.9	3.4	2.9	.....	.....	.....	.....	.....
30	5.1	.....	4.7	4.1	3.9	3.4	2.9	.....	3.4	.....	.....	.....
31	6.5	.....	4.7	.....	3.9	.....	2.9	.....	.....	.....	.....	.....

NOTE.—No flow Jan. 1 to 8, Aug. 1 to Sept. 28 and Oct. 2 to Dec. 31.

Daily discharge, in second-feet, of San Gabriel River near Azusa, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	1,540	235	580	246	128	28	0	0	7	0	0
2	0	900	235	680	245	98	28	0	0	0	0	0
3	0	1,140	585	690	243	98	28	0	0	0	0	0
4	0	3,180	2,470	590	241	98	28	0	0	0	0	0
5	0	2,140	1,830	500	239	76	28	0	0	0	0	0
6	0	1,400	1,540	510	238	76	28	0	0	0	0	0
7	0	1,020	1,540	520	236	76	19	0	0	0	0	0
8	0	785	3,560	430	234	76	19	0	0	0	0	0
9	100	900	7,660	440	232	76	19	0	0	0	0	0
10	1,070	680	9,100	360	231	57	19	0	0	0	0	0
11	200	680	4,500	370	229	57	19	0	0	0	0	0
12	50	680	3,430	375	227	57	19	0	0	0	0	0
13	16	680	2,300	380	175	57	19	0	0	0	0	0
14	2	680	2,060	390	360	57	12	0	0	0	0	0
15	1,440	585	1,820	310	218	41	12	0	0	0	0	0
16	455	500	1,780	320	217	41	12	0	0	0	0	0
17	153	420	1,570	325	217	41	12	0	0	0	0	0
18	78	350	1,520	350	217	41	12	0	0	0	0	0
19	50	290	1,470	375	168	41	12	0	0	0	0	0
20	39	235	1,270	325	168	41	12	0	0	0	0	0
21	30	235	1,200	350	280	41	12	0	0	0	0	0
22	22	185	1,020	345	168	41	12	0	0	0	0	0
23	16	185	963	345	168	41	12	0	0	0	0	0
24	11	140	840	340	128	28	7	0	0	0	0	0
25	1,070	140	850	340	128	28	7	0	0	0	0	0
26	541	140	730	335	128	28	3	0	0	0	0	0
27	312	235	740	335	128	28	3	0	0	0	0	0
28	253	235	640	330	128	28	1	0	0	0	0	0
29	5,190	.....	650	250	128	28	1	0	50	0	0	0
30	1,680	.....	560	248	128	28	1	0	28	0	0	0
31	4,150	.....	570	.....	128	.....	1	0	.....	0	.....	0

NOTE.—Daily discharge determined from three rather poorly defined rating curves applicable Jan. 1, 1910 to Jan. 29, 1911, Jan. 30 to Mar. 10, 1911, and May 16 to Dec. 31, 1911. Indirect method for shifting channels was used Mar. 11 to May 15. Daily discharge estimated Jan. 9 and Sept. 29 from precipitation records and observer's notes. Estimates roughly approximate.

Monthly discharge of San Gabriel River near Azusa, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	5,190	0	546	33,600	C.
February	3,180	140	724	40,200	B.
March	9,100	235	1,910	117,000	C.
April	690	248	401	23,900	B.
May	360	128	201	12,400	B.
June	128	28	55.1	3,280	C.
July	28	1	14.4	885	D.
August	0	0	.0	0	
September	50	0	2.6	155	D.
October	7	0	.2	12	D.
November	0	0	.0	0	
December	0	0	.0	0	
The year	9,100	0	320	231,000	

Combined daily discharge, in second-feet, of San Gabriel River and canal near Azusa, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	33	1,610	310	650	310	200	99	69	45	74	49	44
2	33	968	310	753	316	170	72	69	46	70	49	43
3	33	1,210	660	763	314	170	99	69	47	66	45	43
4	33	3,250	2,540	664	312	169	99	69	46	60	45	44
5	33	2,210	1,900	574	310	147	100	68	48	56	46	45
6	32	1,470	1,610	584	309	146	100	68	49	55	47	50
7	32	1,090	1,610	594	307	146	91	68	48	52	47	56
8	32	856	3,630	504	305	148	91	66	46	51	46	49
9	137	972	7,720	514	303	147	91	65	47	52	47	47
10	1,110	753	9,160	434	302	129	91	65	46	51	49	46
11	261	752	4,560	444	299	129	91	64	44	51	52	46
12	112	752	3,490	449	297	128	91	61	43	50	51	45
13	80	752	2,360	454	245	128	91	60	44	48	50	45
14	68	752	2,120	464	400	129	83	58	43	47	50	46
15	1,510	657	1,880	384	288	112	84	59	43	45	49	46
16	525	572	1,840	394	288	112	84	58	41	44	50	46
17	222	495	1,630	399	288	113	84	56	41	45	47	48
18	152	425	1,590	424	289	113	84	56	41	45	46	48
19	125	365	1,490	449	240	113	84	54	40	45	47	47
20	114	310	1,340	398	240	113	84	54	40	44	47	47
21	104	308	1,270	423	334	113	84	54	41	44	47	47
22	96	260	1,090	418	239	113	84	54	41	44	47	45
23	90	260	1,030	418	240	112	84	52	42	44	47	46
24	85	215	909	412	200	99	79	52	42	44	46	45
25	1,140	215	919	412	200	99	79	51	42	44	46	45
26	615	215	802	407	200	99	75	52	42	45	43	45
27	386	310	811	406	200	99	75	52	42	53	44	46
28	327	310	711	402	200	99	71	51	42	55	44	47
29	5,260	.....	721	321	200	99	71	50	113	53	44	54
30	1,750	.....	630	320	200	99	71	49	94	53	44	50
31	4,220	.....	638	.....	200	.....	71	46	.....	51	.....	48

Combined monthly discharge of San Gabriel River and canal near Azusa, Cal., for 1911.

[Drainage area, 222 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	5,260	32	605	2.73	3.15	37,200
February	3,250	215	797	3.59	3.74	44,300
March	9,160	310	1,980	8.92	10.28	122,000
April	763	320	474	2.14	2.39	28,200
May	400	200	270	1.22	1.41	16,600
June	200	99	126	.568	.63	7,500
July	100	71	85.1	.383	.44	5,230
August	69	46	58.7	.264	.30	3,610
September	113	40	47.6	.214	.24	2,830
October	74	44	51.0	.230	.27	3,140
November	52	43	47.0	.212	.24	2,800
December	56	43	46.7	.210	.24	2,870
The year	9,160	32	381	1.72	23.33	276,000

NOTE.—This table does not include any diversion above the station except the Pacific Light & Power Co.'s canal. Hence the discharge per square mile and the run-off in inches are subject to considerable error during the irrigation season.

PACIFIC LIGHT & POWER CO.'S CANAL[1] NEAR AZUSA, CAL.

Location.—At Pacific Light & Power Co.'s power house, about 1¾ miles north of Azusa.

Records available.—1896 to December 31, 1911.

Discharge.—Computed from records showing kilowatt output of plant.

Accuracy.—In compiling these records it is considered that 1 second-foot develops 25 kilowatts. Results are believed to be good.

Daily discharge, in second-feet, of Pacific Light & Power Co.'s canal near Azusa, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	33	70	75	70	64	72	71	69	45	67	49	44
2	33	68	75	73	71	72	44	69	46	70	49	43
3	33	69	75	73	71	72	71	69	47	66	45	43
4	33	70	67	74	71	71	71	69	46	60	45	44
5	33	72	71	74	71	71	72	68	48	56	46	45
6	32	72	68	74	71	70	72	68	49	55	47	50
7	32	73	66	74	71	70	72	68	48	52	47	56
8	32	71	71	74	71	72	72	66	46	51	46	49
9	37	72	65	74	71	71	72	65	47	52	47	47
10	44	73	55	74	71	72	72	65	46	51	49	46
11	61	72	58	74	70	72	72	64	44	51	52	46
12	62	72	60	74	70	71	72	61	43	50	51	45
13	64	72	60	74	70	71	72	60	44	48	50	45
14	66	72	61	74	40	72	71	58	43	47	50	46
15	68	72	60	74	70	71	72	59	43	45	49	46
16	70	72	63	74	71	71	72	58	41	44	50	46
17	69	75	64	74	71	72	72	56	41	45	47	48
18	74	75	68	74	72	72	72	56	41	45	46	48
19	75	75	24	74	72	72	72	54	40	45	47	47
20	75	75	73	73	72	72	72	54	40	44	47	47
21	74	73	71	73	54	72	72	54	41	44	47	47
22	74	75	69	73	71	72	72	54	41	44	47	45
23	74	75	69	73	72	71	72	52	42	44	47	46
24	74	75	69	72	72	71	72	52	42	44	46	45
25	74	75	69	72	72	71	72	51	42	44	46	45
26	74	75	72	72	72	71	72	52	42	45	43	45
27	74	75	71	71	72	71	72	52	42	53	44	46
28	74	75	71	72	72	71	70	51	42	55	44	47
29	74	.....	71	71	72	71	70	50	63	53	44	54
30	74	.....	70	72	72	71	70	49	66	53	44	50
31	74	.....	68	.....	72	.....	70	46	.....	51	.....	48

NOTE.—Jan. 18, full head of water turned in at headgate of canal; Feb. 1-5 and 21, part of water out o canal in the afternoon; Mar. 4, part of water out of canal; Mar. 19, May 14, May 21, and July 2, all water out of canal part of day. Allowance made for deficiency of discharge on above dates.

Monthly discharge of Pacific Light & Power Co.'s canal near Azusa, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
January	75	32	59.4	3,650
February	75	68	72.9	4,050
March	75	24	66.1	4,060
April	74	70	73.1	4,350
May	72	40	69.5	4,270
June	72	70	71.4	4,250
July	72	44	70.7	4,350
August	69	46	58.7	3,610
September	66	40	45.0	2,680
October	70	44	50.8	3,120
November	52	43	47.0	2,800
December	56	43	46.7	2,870
The year	75	24	60.9	44,100

NOTE.—Accuracy not known.

[1] Formerly known as San Gabriel power canal.

LOS ANGELES RIVER BASIN.

ARROYO SECO NEAR PASADENA, CAL.

Location.—Just below highway crossing at forest ranger's station in the Angeles National Forest, near south line of sec. 30, T. 2 N., R. 12 W. (unsurveyed), about 3 miles above Devils Gate and 5½ miles northwest of Pasadena.

Records available.—December 1, 1910, to December 31, 1911.

Drainage area.—16.4 square miles.

Gage.—Staff in two sections fastened to an alder tree on right bank 300 feet southeast of ranger's cabin.

Channel.—Solid rock and gravel and somewhat shifting.

Discharge measurements.—Made by wading below gage.

Accuracy.—Results are considered fairly good.

Cooperation.—Gage height record furnished by United States Forest Service.

Discharge measurements of Arroyo Seco near Pasadena, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 22	W. V. Hardy	3.78	18
Mar. 1	do	3.85	22
May 2	do	3.47	13
June 21	do	3.30	4.8
Nov. 3	F. C. Ebert	3.14	1.6
3	Lasley Lee	3.14	1.6

NOTE.—Measurements were made by wading below the gage.

Daily gage height, in feet, of Arroyo Seco near Pasadena, Cal., for 1911.

[Gale J. Dunston, observer.]

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.92	.....	3.36	3.25	3.13	3.01	.....	3.21	3.16
2	3.91	.....	3.35	3.24	.....	3.01	3.25	3.22	3.16
3	3.91	3.54	3.35	3.23	.....	3.01	3.24	3.20	.....
4	3.90	3.48	3.34	3.22	.....	3.00	3.23	3.19	3.17
5	3.86	3.46	3.33	3.22	.....	3.00	3.20	.....	3.16
6	3.79	3.44	3.32	3.22	.....	3.00	3.19	3.19	3.21
7	3.75	.....	3.32	3.21	.....	3.00	3.21	3.18	3.20
8	3.71	3.40	3.31	3.20	.....	3.00	.....	3.18	3.20
9	3.62	3.39	3.31	3.18	.....	3.01	3.19	3.17	3.20
10	3.62	3.39	3.30	3.17	3.12	3.01	3.18	3.24	.....
11	3.61	3.38	3.29	3.16	3.12	3.01	3.17	3.22	3.19
12	3.59	3.38	3.28	3.15	3.12	3.01	3.15	.....	3.18
13	3.59	3.37	3.28	3.15	.....	3.02	3.15	3.21	3.18
14	3.57	3.39	3.28	3.15	3.13	3.02	3.19	3.20	3.18
15	3.56	3.39	3.28	3.15	3.12	3.02	.....	3.19	3.17
16	.....	3.39	3.27	3.15	3.11	3.02	3.14	3.19	3.16
17	3.54	3.39	3.27	3.14	3.12	3.01	3.14	3.18	.....
18	3.51	3.39	3.27	3.14	3.11	3.01	3.14	3.18	3.17
19	3.50	3.38	3.27	3.14	3.10	3.02	3.14	3.18	3.17
20	3.49	.....	3.27	3.15	3.09	3.01	3.14	3.17	3.17
21	.....	.....	3.27	3.14	3.07	3.01	3.15	3.16	3.17
22	3.49	.....	3.26	3.14	3.06	3.02	3.15	3.15	3.16
23	.....	.....	3.26	3.14	3.06	3.02	3.16	3.15	.....
24	3.48	.....	3.26	3.15	3.05	3.03	3.17	3.15	.....
25	3.47	.....	3.26	3.15	3.05	3.04	3.17	3.14	.....
25	3.58	.....	3.25	3.15	3.05	3.04	3.18	3.14	.....
27	3.58	.....	3.25	3.15	3.05	3.04	3.20	3.15	.....
28	3.57	.....	3.25	3.15	3.04	3.09	3.22	3.15	.....
29	.....	.....	3.25	3.15	3.03	3.90	3.21	3.16	.....
30	.....	3.36	3.25	3.15	3.02	3.68	3.20	3.15	.....
31	.....	3.36	.....	3.14	3.01	.....	3.21	.....	.....

Daily discharge, in second-feet, of Arroyo Seco near Pasadena, Cal., for 1910–11.

Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.
1910.		1910.		1910.		1910.		1910.		1910.	
1	1.4	6	2.1	11	2.1	16	4.2	21	5.0	26	7.0
2	1.6	7	2.1	12	2.0	17	4.2	22	5.6	27	7.5
3	1.7	8	2.0	13	2.3	18	4.6	23	5.6	28	7.5
4	1.8	9	2.1	14	2.8	19	4.6	24	6.0	29	7.0
5	2.0	10	2.0	15	3.9	20	5.0	25	7.0	30	7.0
										31	7.5

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.									
1	63	19	7.2	3.2	1.3	0.6	17	2.2	1.6
2	62	19	6.8	3.0	1.3	.6	3.2	2.5	1.6
3	62	18	6.8	2.8	1.3	.6	3.0	2.0	1.6
4	60	14	6.3	2.5	1.3	.5	2.8	1.9	1.7
5	54	13	5.8	2.5	1.3	.5	2.0	1.9	1.6
6	44	11	5.4	2.5	1.2	.5	1.9	1.9	2.2
7	39	10	5.4	2.2	1.2	.5	2.2	1.8	2.0
8	34	9.0	5.0	2.0	1.2	.5	2.0	1.8	2.0
9	25	8.6	5.0	1.8	1.2	.6	1.9	1.7	2.0
10	25	8.6	4.5	1.7	1.2	.6	1.8	3.0	2.0
11	24	8.1	4.2	1.6	1.2	.6	1.7	2.5	1.9
12	22	8.1	4.0	1.5	1.2	.6	1.5	2.4	1.8
13	22	7.6	4.0	1.5	1.2	.6	1.5	2.2	1.8
14	21	8.6	4.0	1.5	1.3	.6	1.9	2.0	1.8
15	20	8.6	4.0	1.5	1.2	.6	1.6	1.9	1.7
16	19	8.6	3.8	1.5	1.1	.6	1.4	1.9	1.6
17	18	8.6	3.8	1.4	1.2	.6	1.4	1.8	1.6
18	16	8.6	3.8	1.4	1.1	.6	1.4	1.8	1.7
19	15	8.1	3.8	1.4	1.0	.6	1.4	1.8	1.7
20	14	8.0	3.8	1.5	1.0	.6	1.4	1.7	1.7
21	14	7.9	3.8	1.4	.8	.6	1.5	1.6	1.7
22	14	7.9	3.5	1.4	.8	.6	1.5	1.5	1.6
23	14	7.8	3.5	1.4	.8	.6	1.6	1.5	1.6
24	14	7.7	3.5	1.5	.8	.6	1.7	1.5	1.6
25	13	7.6	3.5	1.5	.8	.7	1.7	1.4	1.6
26	21	7.5	3.2	1.5	.8	.7	1.8	1.4	1.5
27	21	7.4	3.2	1.5	.8	.7	2.0	1.5	1.5
28	21	7.4	3.2	1.5	.7	1.0	2.5	1.5	1.5
29	20	7.3	3.2	1.5	.6	60	2.2	1.6	1.5
30	20	7.2	3.2	1.5	.6	31	2.0	1.5	1.5
31	.....	7.2	.....	1.4	.6	.....	2.2	.....	1.5

NOTE.—Daily discharge determined from two rating curves fairly well defined below 20 second-feet and applicable Dec. 1, 1910, to Mar. 10, 1911, and Mar. 11 to Dec. 31, 1911. Discharge interpolated for days on which gage was not read.

Monthly discharge of Arroyo Seco near Pasadena, Cal., for 1910–11.

[Drainage area, 16.4 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area).	Total in acre-feet.	
1910.							
December	7.5	1.4	4.10	0.250	0.29	252	C.
1911.							
April	63	13	27.7	1.69	1.89	1,650	B.
May	19	7.2	9.55	.582	.67	587	B.
June	7.2	3.2	4.37	.266	.30	260	C.
July	3.2	1.4	1.78	.109	.13	109	D.
August	1.3	.6	1.04	.063	.07	64	D.
September	60	.5	3.60	.220	.25	214	D.
October	17	1.4	2.38	.145	.17	146	D.
November	3.0	1.4	1.86	.113	.13	111	D.
December	2.2	1.5	1.70	.104	.12	105	D.
The period						3,250	

SANTA CLARA RIVER BASIN.

SANTA CLARA RIVER AT FILLMORE, CAL.

Location.—At highway bridge at Fillmore, in the NW. ¼ sec. 31, T. 4 N., R. 19 W., about 1½ miles above mouth of Sespe Creek and half a mile southwest of Fillmore.

Records available.—August 31 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to piling near right end of bridge.

Channel.—Shifting sand.

Discharge measurements.—Made from bridge at gage and by wading.

Diversions.—Water diverted for irrigation from main river and tributaries above the station.

Accuracy.—Discharge computed by indirect method for shifting channels. Results are approximate.

Discharge measurements of Santa Clara River at Fillmore, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 31[a]	F. C. Ebert	3.16	36
Oct. 25[b]	....do	2.40	23
25[b]	Lasley Lee	2.40	23

[a] Made by wading 300 feet above gage. [b] Made by wading under highway bridge at gage.

Daily gage height, in feet, and discharge, in second-feet, of Santa Clara River at Fillmore, Cal., for 1911.

[William M. Zenor, observer.]

Day.	September.		October.		November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	3.15	36	3.15	43	2.45	26	2.45	31
2	3.15	36	3.15	45	2.45	26	2.45	31
3	3.25	41	3.15	45	2.45	26	2.45	31
4	3.3	43	3.15	45	2.45	26	2.45	31
5	3.15	36	3.0	39	2.45	26	2.45	31
6	3.15	36	3.0	39	2.45	26	2.45	31
7	3.15	36	3.15	45	2.45	27	2.45	31
8	3.15	39	3.15	45	2.45	27	2.45	31
9	3.0	34	3.15	45	2.45	27	2.45	31
10	3.15	39	3.25	51	2.45	27	2.45	31
11	3.15	39	3.15	47	2.45	27	2.25	25
12	3.15	39	3.0	41	2.45	27	2.25	25
13	3.15	39	3.0	41	2.45	28	2.25	25
14	3.15	39	3.25	51	2.45	28	2.25	25
15	3.15	39	3.0	41	2.45	28	2.25	25
16	3.15	41	3.0	41	2.45	28	2.25	25
17	3.0	36	3.0	41	2.45	28	2.25	25
18	3.0	36	3.15	49	2.45	28	2.25	25
19	3.15	41	3.15	49	2.45	29	2.25	25
20	3.25	45	3.0	43	2.45	29	2.25	25
21	3.15	41	3.0	43	2.45	29	2.25	26
22	3.0	36	3.0	43	2.45	29	2.25	26
23	3.15	43	3.15	49	2.45	29	2.25	26
24	.....	43	2.45	24	2.45	29	2.25	26
25	.....	43	2.45	24	2.45	30	2.25	26
26	.....	43	2.45	25	2.45	30	2.25	26
27	.....	43	2.45	25	2.45	30	2.25	26
28	.....	43	2.45	25	2.45	30	2.25	26
29	.....	43	2.45	25	2.45	30	2.25	26
30	.....	43	2.45	25	2.45	30	2.25	26
31	.....	.....	2.45	25	.....	.....	2.25	26

NOTE.—Daily discharge determined by indirect method for shifting channels.

Monthly discharge of Santa Clara River at Fillmore, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
September	45	34	39.7	2,360	D.
October	51	24	39.3	2,420	D.
November	30	26	28.0	1,670	D.
December	31	25	27.3	1,680	D.

PIRU CREEK NEAR PIRU, CAL.

Location.—Below suspension footbridge in southern part of Temescal grant in Santa Barbara National Forest, 2 miles above junction with Santa Clara River and about 1¾ miles northeast of Piru.

Records available.—October 28 to December 31, 1911.

Drainage area.—432 square miles.

Gage.—Vertical staff in two sections fastened to cottonwood tree on right bank, about 300 feet below bridge.

Channel.—Gravel and sand; shifting.

Discharge measurements.—Made from bridge above gage and by wading.
Diversions.—Water is diverted above the station, through a 4-inch pipe, for municipal purposes at Piru.
Accuracy.—Estimates are withheld until additional data are available.
Cooperation.—Gage-height record furnished by United States Forest Service.

The following discharge measurement was made by F. C. Ebert by wading at the gage:

October 28, 1911: Gage height, 2.57 feet; discharge, 30 second-feet.

Daily gage height, in feet, of Piru Creek near Piru, Cal., for 1911.

[George C. Hollister, observer.]

Day.	Oct.	Nov.	Day.	Oct.	Nov.	Day.	Oct.	Nov.
1			11			21		
2			12			22		
3			13			23		
4			14		2.01	24		
5			15			25		
6			16			26		
7			17			27		
8			18			28	2.57	
9		2.01	19		2.01	29		
10		2.01	20			30	2.57	
						31		

SESPE CREEK AT SESPE, CAL.

Location.—At Southern Pacific Railroad bridge in the NW. ¼ sec. 25, T. 4 N., R. 20 W., 1½ miles above junction with Santa Clara River and one-half a mile southeast of Sespe.
Records available.—August 31 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Inclined staff in two sections on left bank at bridge.
Channel.—Gravel and will shift at high stages.
Discharge measurements.—Made from railroad bridge and by wading.
Diversions.—The Fillmore Irrigation Co.'s canal, which diverts about 4 miles above the station, furnishes water for irrigation and domestic uses at Sespe and Fillmore.
Accuracy.—Results are good.

Discharge measurements of Sespe Creek at Sespe, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 31 [a]	F. C. Ebert	4.18	7.3
Oct. 26 [b]	Lasley Lee	4.20	7.0

[a] Made by wading 200 feet below gage. [b] Made by wading 300 feet below gage.

Daily gage height, in feet, and discharge, in second-feet, of Sespe Creek at Sespe, Cal., for 1911.

[J. R. Fleming and Edward Perkins, observers.]

Day.	August.		September.		October.		November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1			4.20	7.0	4.38	16	4.00	10	4.33	13
2			4.20	7.0	4.35	14	3.90	10	4.35	14
3			4.20	7.0	4.35	14	3.83	10	4.33	13
4			4.22	7.9	4.33	13	3.90	10	4.35	14
5			4.20	7.0	4.33	13	3.93	10	4.35	14
6			4.20	7.0	4.33	13	3.95	10	4.40	17
7			4.22	7.9	4.30	11	4.25	9.2	4.45	20
8			4.22	7.9	4.30	11	4.28	10	4.50	23
9			4.22	7.9	4.30	11	4.28	10	4.45	20
10			4.22	7.9	4.30	11	4.28	10	4.45	20
11			4.22	7.9	4.28	10	4.28	10	4.45	20
12			4.25	9.2	4.28	10	4.10	12	4.45	20
13			4.25	9.2	4.28	10	4.10	12	4.43	19
14			4.25	9.2	4.40	17	4.35	14	4.43	19
15			4.28	10	4.30	11	4.40	17	4.43	19
16			4.28	10	4.33	13	4.38	16	4.45	20
17			4.28	10	4.33	13	4.35	14	4.43	19
18			4.28	10	4.28	10	4.35	14	4.40	17
19			4.20	7.0	4.25	9.2	4.38	16	4.40	17
20			4.20	7.0	4.22	7.9	4.35	14	4.43	19
21			4.20	7.0	4.20	7.0	4.35	14	4.43	19
22			4.20	7.0	4.20	7.0	4.33	13	4.45	20
23			4.25	9.2	4.20	7.0	4.33	13	4.45	20
24			4.30	11	4.20	7.0	4.33	13	4.43	19
25			4.30	11	4.18	6.4	4.30	11	4.43	19
26			4.30	11	4.20	7.0	4.33	13	4.43	19
27			4.30	11	4.25	9.2	4.33	13	4.45	20
28			4.30	11	4.28	10	4.30	11	4.45	20
29			4.30	11	4.30	11	4.33	13	4.45	20
30			4.32	12	4.30	11	4.33	13	4.45	20
31	4.18	6.4			4.28	10			4.43	19

NOTE.—During October and November a retaining wall was under construction just above the county bridge to shut water out of an old channel made by the preceding winter's flood. Water was diverted through this old channel to facilitate construction about Nov. 1–6 and 12–13. Discharge of river was not registered by the gage on these days. Daily discharge determined from a well-defined rating curve. Discharge interpolated Nov. 1–6 and 12–13.

Monthly discharge of Sespe Creek at Sespe, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
September	12	7.0	8.84	526	B.
October	17	6.4	10.7	658	B.
November	17	9.2	12.2	726	B.
December	23	13.0	18.5	1,140	B.

SANTA PAULA CREEK NEAR SANTA PAULA, CAL.

Location.—Just below mouth of Sisar Creek, at east boundary of Ojai grant, in Santa Barbara National Forest, 6 miles above junction with Santa Clara River and about 5½ miles northwest of Santa Paula.

Records available.—October 27 to December 31, 1911.

Drainage area.—33.4 square miles.

Gage.—Vertical staff fastened to tree on left bank about 600 feet below mouth of Sisar Creek.

Channel.—Bowlders and gravel; will shift at high stages.

Discharge measurements.—Made from highway bridge 1 mile below gage and by wading.

Cooperation.—Gage-height record furnished by United States Forest Service.

Only gage height recorded by observer was on December 31, when the reading was 2.45 feet.

Discharge measurements of Santa Paula Creek near Santa Paula, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 27[a]	F. C. Ebert	2.40	4.9
27[a]	Lasley Lee	2.40	4.8

[a] Made by wading 100 feet above gage.

VENTURA RIVER BASIN.

VENTURA RIVER NEAR NORDHOFF, CAL.

Location.—Just below junction of Matilija and North Fork of Matilija creeks, in the N. ½ SW. ¼ sec. 28, T. 5 N., R. 23 W., about 4 miles northwest of Nordhoff.

Records available.—October 23 to December 31, 1911.

Drainage area.—19.9 square miles.

Gage.—Vertical staff in three sections on right bank about 300 feet below junction of creeks.

Channel.—Gravel and bowlders; may shift during high water.

Discharge measurements.—Made from suspension footbridge 1 mile below gage and by wading.

Diversions.—A small ditch takes water for domestic uses from the North Fork of Matilija Creek above the station.

Accuracy.—Results are good.

Discharge measurements of Ventura River near Nordhoff, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 23[a]	F. C. Ebert	2.18	11
23[a]	Lasley Lee	2.18	11

[a] Made by wading 500 feet below gage.

Daily gage height, in feet, and discharge, in second-feet, of Ventura River near Nordhoff, Cal., for 1911.

[P. W. Soper, observer.]

Day.	October.		November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1			2.25	13	2.20	12
2			2.22	12	2.20	12
3			2.22	12	2.20	12
4			2.22	12	2.25	13
5			2.22	12	2.25	13
6			2.22	12	2.60	27
7			2.22	12	2.35	17
8			2.22	12	2.30	15
9			2.22	12	2.30	15
10			2.22	12	2.30	15
11			2.25	13	2.30	15
12			2.25	13	2.30	15
13			2.25	13	2.30	15
14			2.25	13	2.30	15
15			2.25	13	2.30	15
16			2.22	12	2.28	14
17			2.22	12	2.28	14
18			2.22	12	2.28	14
19			2.22	12	2.28	14
20			2.22	12	2.28	14
						14
21			2.22	12	2.28	14
22			2.22	12	2.28	
23	2.18	11	2.25	13	2.28	14
24	2.20	12	2.20	12	2.28	14
25	2.20	12	2.20	12	2.28	14
26	2.22	12	2.20	12	2.28	14
27	2.25	13	2.20	12	2.28	14
28	2.28	14	2.20	12	2.32	16
29	2.25	13	2.20	12	2.32	16
30	2.25	13	2.20	12	2.30	15
31	2.25	13			2.30	15

NOTE.—Daily discharge determined from a fairly well defined curve.

Monthly discharge of Ventura River near Nordhoff, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October 23–31	14	11	12.6	225	B.
November	13	12	12.2	726	B.
December	27	12	14.7	904	B.

VENTURA RIVER NEAR VENTURA, CAL.

Location.—At highway bridge in Foster Memorial Park near southeast corner of Santa Ana grant, below Ventura Water Co.'s diversion dam, one-fourth mile below mouth of Coyote Creek, and about 5 miles north of Ventura and mouth of river.

Records available.—September 4 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Chain gage at bridge. Length of chain 28.14 feet.

Channel.—Gravel and bowlders; may shift during high water.

Discharge measurements.—Made from bridge at gage and by wading.

Diversions.—Diversion for irrigation from main river and tributaries above the station. Pipe line for irrigation and municipal water supply in the vicinity of Ventura heads just above the dam.

Accuracy.—Results are fairly good.

Discharge measurements of Ventura River near Ventura, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 4	F. C. Ebert	1.71	24
Oct. 24	do	1.70	18
24	Lasley Lee	1.70	18

NOTE.—Measurements were made by wading 100 feet below the gage.

Daily gage height, in feet, and discharge, in second-feet, of Ventura River near Ventura, Cal., for 1911.

[J. B. Train, observer.]

Day.	September.		October.		November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	1.70	21	1.70	21	1.70	21
2	.....	.....	1.72	23	1.70	21	1.70	21
3	.....	.....	1.70	21	1.70	21	1.70	21
4	1.72	23	1.70	21	1.70	21	1.70	21
5	1.72	23	1.70	21	1.70	21	1.70	21
6	1.72	23	1.72	23	1.70	21	1.78	27
7	1.72	23	1.70	21	1.70	21	1.78	27
8	1.72	23	1.68	20	1.70	21	1.78	27
9	1.72	23	1.70	21	1.70	21	1.78	27
10	.....	23	1.68	20	1.70	21	1.75	25
11	1.72	23	1.68	20	1.70	21	1.75	25
12	1.72	23	1.70	21	1.70	21	1.75	25
13	1.72	23	1.70	21	1.70	21	1.75	25
14	1.72	23	1.70	21	1.70	21	1.75	25
15	1.70	21	1.70	21	1.70	21	1.78	27
16	1.68	20	1.70	21	1.70	21	1.78	27
17	1.70	21	1.65	18	1.70	21	1.78	27
18	1.65	18	1.70	21	1.70	21	1.75	25
19	1.60	14	1.65	18	1.70	21	1.75	25
20	1.68	20	1.68	20	1.70	21	1.75	25
21	1.65	18	1.70	21	1.70	21	1.75	25
22	1.68	20	1.70	21	1.70	21	1.75	25
23	1.70	21	1.70	21	1.70	21	1.75	25
24	1.68	20	1.70	21	1.70	21	1.75	25
25	1.68	20	1.70	21	1.70	21	1.75	25
26	1.68	20	1.70	21	1.70	21	1.75	25
27	1.65	18	1.70	21	1.70	21	1.75	25
28	1.70	21	1.70	21	1.70	21	1.75	25
29	1.70	21	1.70	21	1.70	21	1.75	25
30	1.70	21	1.70	21	1.70	21	1.75	25
31	.....	.....	1.70	21	.....	.....	1.75	25

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Ventura River near Ventura, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
September 4–30	23	14	21.0	1,120	B.
October	23	18	20.8	1,280	B.
November	21	21	21.0	1,250	B.
December	27	21	24.8	1,520	B.

SANTA YNEZ RIVER BASIN.

SANTA YNEZ RIVER NEAR SANTA BARBARA, CAL.

Location.—One-fourth mile below Gibraltar dam site, in the NE. ¼ NE. ¼ sec. 15, T. 5 N., R. 27 W., about 7 miles north of Santa Barbara. Mono Creek enters 3½ miles below the station.

Records available.—November 1, 1903, to April 30, 1907; October 1, 1907, to January 31, 1908; and February 6, 1910, to December 31, 1911. The station was maintained about 5 miles above the present location from November 21, 1902, to June 20, 1903.

Drainage area.—207 square miles.

Gage.—Staff in three sections about 900 feet below north portal of the Santa Barbara water-supply tunnel. On April 13, 1911, gage datum was lowered 5.00 feet. All gage heights for 1911 are referred to the new datum.

Channel.—Sand and gravel; shifts greatly at extreme high stages; relatively permanent at low stages.

Discharge measurements.—Made from car and cable at gage and by wading at low water.

Accuracy.—The flood in March, 1911, greatly changed the channel, and hence no reliable estimates can be made for the period February 6, 1910, to March 14, 1911. Frequent measurements were secured during 1911, and results are good.

Cooperation.—Maintained in cooperation with Santa Barbara Water Commission.

Discharge measurements of Santa Ynez River near Santa Barbara, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 27	C. M. Watts	6.50	514
31	.....do	6.20	361
Apr. 13	.....do	5.72	229
24	.....do	5.48	155
29	.....do	5.40	148
May 5	.....do	5.29	108
10	.....do	5.20	105
20	.....do	5.10	85
30	.....do	5.00	62
June 5	.....do	4.96	55
11	.....do	4.91	49
29	.....do	4.80	27
July 2	.....do	4.75	27
6	.....do	4.75	22
13	.....do	4.70	19
20	.....do	4.66	15
24	.....do	4.65	13
28	.....do	4.60	10
Aug. 3	.....do	4.56	8.3
11	.....do	4.60	8.5
21	.....do	4.55	5.0
29	.....do	4.52	5.0
31	.....do	4.50	4.9
Sept. 6	F. C. Ebert	4.50	4.9
6	C. M. Watts	4.50	4.7
20	.....do	4.50	4.7
Oct. 2	.....do	4.52	4.9
14	.....do	4.53	5.4
21	.....do	4.52	6.0
31	.....do	4.66	8.3
Nov. 11	.....do	4.68	8.9
20	.....do	4.80	10
Dec. 1	.....do	4.80	10
11	.....do	4.85	13
21	.....do	4.83	13

NOTE.—All measurements were made by wading at south end of narrows about 2,000 feet above gage. Beginning with measurement made June 29, inflow from the north portal of tunnel and a small creek between measuring section and gage were estimated (closely) and added to the measured amount. The estimate varied from 0.5 to 1.05 second-feet.

Daily gage height, in feet, of Santa Ynez River near Santa Barbara, Cal., for 1911.

[C. M. Watts, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.21	8.55	8.45	6.18	5.37	5.00	4.77	4.57	.....	4.52	4.65	4.80
2	6.21	7.90	8.85	6.15	.....	.....	4.76	4.56	.....	4.52	4.65	4.80
3	6.21	8.35	9.95	6.13	5.32	4.99	.....	4.56	4.50	4.52	.....	4.80
4	6.21	9.75	10.10	.....	5.31	4.98	.....	.....	4.50	4.52	4.65	.....
5	6.21	9.00	10.65	6.07	5.29	4.96	4.75	.....	4.50	4.52	4.65	4.82
6	6.21	8.70	10.85	6.04	5.27	4.96	4.75	4.58	4.50	4.53	4.65	4.95
7	6.21	8.20	11.55	5.98	5.25	4.95	4.73	4.58	4.50	4.53	4.65	4.85
8	6.21	8.10	14.10	5.90	5.25	4.94	4.72	4.58	4.50	4.53	4.65	4.85
9	6.35	8.10	20.00	5.86	5.22	4.93	4.72	4.59	4.50	.....	4.65	4.85
10	8.10	8.00	12.45	5.82	5.20	4.92	4.72	4.59	4.50	.....	4.65	4.85
11	6.80	8.40	10.40	5.79	5.20	4.91	4.71	4.60	4.51	4.53	4.68	4.85
12	6.65	8.20	9.10	5.77	5.19	.....	4.71	4.60	4.51	4.53	4.73	4.83
13	6.87	8.00	8.90	5.72	5.19	4.89	4.70	4.57	4.51	4.53	4.77	4.83
14	6.90	8.20	.....	5.70	5.17	4.88	4.70	4.57	4.51	4.53	4.78	4.82
15	7.80	8.00	7.80	5.67	5.16	4.88	4.69	4.57	4.51	4.53	4.79	4.82
16	7.07	7.85	7.65	5.65	5.15	4.89	4.67	4.56	4.51	4.53	4.79	4.82
17	.....	7.80	7.55	5.62	5.14	4.88	.....	4.56	4.50	4.53	4.79	4.83
18	6.76	7.75	7.50	5.59	5.12	4.87	4.67	4.56	.....	4.52	4.79	4.83
19	6.69	7.70	7.40	5.57	5.11	4.85	4.66	4.56	4.50	4.52	4.79	4.83
20	6.62	7.73	7.28	5.53	5.10	4.84	4.66	4.55	4.50	4.52	4.80	4.83
21	6.58	7.64	7.30	5.51	5.09	4.84	4.66	4.55	4.50	4.52	4.80	4.83
22	6.55	7.60	7.00	5.50	5.06	4.83	4.65	4.53	4.50	4.52	.....	4.83
23	6.52	7.52	6.80	5.49	5.06	4.83	4.65	4.53	4.50	.....	4.80	4.83
24	6.82	7.47	6.70	5.48	5.04	4.83	4.65	4.53	4.50	4.52	4.80	4.83
25	8.00	7.41	6.62	5.46	5.04	4.82	4.64	4.52	4.50	4.52	4.81	.....
26	7.48	7.38	6.53	5.44	5.04	4.81	4.62	4.53	4.50	4.54	4.81	.....
27	7.18	7.42	6.50	5.45	5.03	4.81	4.61	4.53	4.50	4.60	4.81	4.83
28	8.55	7.68	6.43	5.41	5.01	4.81	4.60	4.52	4.51	4.62	4.81	4.83
29	12.30	.....	6.35	5.40	5.01	4.80	4.60	4.52	4.51	4.65	4.80	4.84
30	10.80	.....	6.27	5.38	5.00	4.78	4.59	4.51	4.52	4.65	4.80	4.83
31	10.50	.....	6.20	.....	5.00	.....	4.59	4.50	.....	4.66	.....	4.83

Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Cal., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	377	137	62	27	8	4	5	8	12
2	.....	366	132	61	26	7	4	5	8	12
3	.....	360	126	60	25	7	4	5	8	12
4	.....	350	123	59	25	7	4	5	8	12
5	.....	339	119	56	24	8	4	5	8	13
6	.....	329	115	56	24	8	4	6	8	18
7	.....	309	110	54	22	8	4	6	8	14
8	.....	283	110	52	21	8	4	6	8	14
9	.....	271	104	51	21	8	4	6	8	14
10	.....	258	100	49	21	8	4	6	8	14
11	.....	249	100	48	19	9	4	6	9	14
12	.....	243	98	46	19	9	4	6	10	13
13	.....	229	98	44	18	8	4	6	11	13
14	.....	223	94	43	18	8	4	6	11	13
15	1,350	215	92	43	17	8	4	6	12	13
16	1,230	209	90	44	15	7	4	6	12	13
17	1,160	201	88	43	15	7	4	6	12	13
18	1,120	192	84	42	15	7	4	5	12	13
19	1,050	187	82	38	14	7	4	5	12	13
20	966	177	80	37	14	6	4	5	12	13
21	980	172	78	37	14	6	4	5	12	13
22	780	169	73	36	14	6	4	5	12	13
23	655	166	73	36	14	6	4	5	12	13
24	600	164	69	36	14	6	4	5	12	13
25	560	159	69	34	13	5	4	5	12	13
26	515	154	69	32	11	6	4	6	12	13
27	500	156	67	32	10	6	4	7	12	13
28	471	146	64	32	9	5	4	7	12	13
29	439	144	64	31	9	5	4	8	12	14
30	409	139	62	28	8	4	5	8	12	13
31	384	.....	62	.....	8	4	.....	8	.....	13

NOTE.—Daily discharge obtained from two rating curves applicable Mar. 15 to Oct. 26 and Oct. 27 to Dec. 31. The first curve is well defined below 600 second-feet and the second is fairly well defined.

Monthly discharge of Santa Ynez River near Santa Barbara, Cal., for 1911.

[Drainage area, 207 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
March 15-31	1,350	384	775	3.74	2.36	26,100	B.
April	377	139	231	1.12	1.25	13,700	A.
May	137	62	91.4	.442	.51	5,620	A.
June	62	28	44.1	.213	.24	2,620	B.
July	27	8	16.9	.082	.09	1,040	B.
August	9	4	6.8	.033	.04	418	C.
September	5	4	4.0	.019	.02	238	D.
October	8	5	5.8	.028	.03	357	C.
November	12	8	10.4	.050	.06	619	C.
December	18	12	13.2	.064	.07	812	C.
The period						51,500	

SANTA YNEZ RIVER NEAR LOMPOC, CAL.

Location.—At the highway bridge near east boundary of La Misión Vieja de la Purísima grant, about 1½ miles east of Lompoc.

Records available.—November 10, 1906, to January 9, 1907, and September 25, 1907, to December 31, 1911.

Drainage area.—725 square miles.

Gage.—Vertical staff fastened to pier of bridge.

Channel.—Shifting sand.

Discharge measurements.—Made from bridge at gage and by wading.

Diversions.—Water is not diverted above the station, but water for irrigation is pumped from wells along the banks of the river.

Accuracy.—Discharge for 1911 computed from rating tables, covering short periods, and by indirect method for shifting channels. Results are approximate.

Cooperation.—Gage height record furnished by Santa Barbara Water Commission, through L. M. Hyde, engineer.

Discharge measurements of Santa Ynez River near Lompoc, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 27	W. V. Hardy	4.85	548
Mar. 2	Donald McDonald	6.50	4,930
22	.....do	2.80	1,870
Apr. 11	.....do	2.90	765
May 10	.....do	3.00	389
June 7	.....do	3.00	243
July 11	.....do	2.90	127
Aug. 19	.....do	2.75	55
Sept. 8	.....do	2.70	47
8[a]	F. C. Ebert	2.70	48
Oct. 11	Donald McDonald	2.70	37
Nov. 13	.....do	2.72	45
Dec. 7	.....do	2.80	67

[a] Made by wading 300 feet below gage.

Daily gage height, in feet, of Santa Ynez River near Lompoc, Cal., for 1911.

[D. McDonald, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.7	5.6	6.45	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7
2	3.7	5.0	6.6	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7
3	3.7	4.6	5.6	2.9	3.1	3.0	2.9	2.85	2.7	2.7	2.7	2.7
4	3.7	6.5	6.9	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7
5	3.7	5.8	7.05	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7
6	3.7	5.5	7.05	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7
7	3.7	5.1	9.65	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.8
8	3.7	4.9	9.05	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.8
9	3.7	4.9	9.95	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.8
10	3.9	4.9	7.0	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.8
11	4.4	5.3	5.0	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.8
12	4.3	5.2	4.2	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.8
13	4.3	5.0	3.4	2.9	3.0	3.0	2.9	2.8	2.7	2.7	2.7	2.8
14	4.3	5.2	3.2	2.9	3.0	3.0	2.9	2.8	2.7	2.7	2.7	2.8
15	4.4	5.0	3.2	2.9	3.0	3.0	2.9	2.8	2.7	2.7	2.7	2.8
16	4.5	4.9	2.9	2.9	3.0	3.0	2.9	2.8	2.7	2.7	2.7	2.8
17	4.2	4.8	2.7	3.0	3.0	3.0	2.9	2.75	2.7	2.7	2.7	2.8
18	4.0	4.8	2.7	3.0	3.0	3.0	2.9	2.75	2.7	2.7	2.7	2.8
19	3.9	4.8	2.8	3.0	3.0	3.0	2.85	2.75	2.7	2.7	2.7	2.8
20	3.9	4.9	2.8	3.0	3.0	2.9	2.85	2.75	2.7	2.7	2.7	2.8
21	3.9	4.9	2.8	3.0	3.0	2.9	2.85	2.75	2.7	2.7	2.7	2.8
22	3.9	4.9	2.8	3.0	3.0	2.9	2.85	2.75	2.7	2.7	2.7	2.8
23	3.8	4.9	2.7	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7	2.8
24	3.8	4.9	2.9	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7	2.8
25	4.5	4.9	2.8	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7	2.8
26	4.8	4.8	2.7	3.1	3.0	2.9	2.85	2.7	2.7	2.7	2.7	2.8
27	4.5	4.8	2.8	3.0	3.0	2.9	2.85	2.7	2.7	.....	2.7	2.8
28	4.7	5.0	2.7	.....	3.0	2.9	2.85	2.7	2.7	2.7	2.7	2.8
29	9.3	.....	2.7	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7	2.8
30	6.0	.....	2.7	3.0	3.0	2.9	2.85	2.7	2.7	2.7	2.7	2.8
31	7.05	.....	2.8	.....	3.0	.....	2.85	2.7	.....	2.7	.....	2.8

NOTE.—Feb. 2 to 3 gage height estimated.

Daily discharge, in second-feet, of Santa Ynez River near Lompoc, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	30	2,070	4,750	1,400	520	274	127	97	45	40	37	37
2	30	790	5,290	1,340	500	269	127	97	45	40	37	37
3	30	230	2,070	1,270	590	264	127	97	46	40	37	37
4	30	4,930	6,430	1,210	470	258	127	97	46	39	37	37
5	30	2,610	7,030	1,150	460	253	127	97	47	39	37	37
6	30	1,830	7,030	1,090	440	248	127	97	47	39	37	37
7	30	970	19,000	1,020	430	243	127	97	48	38	37	67
8	30	620	16,100	960	420	243	127	97	48	38	37	67
9	30	620	20,400	900	400	243	127	97	48	38	37	67
10	64	620	15,000	830	389	243	127	97	47	37	37	67
11	335	1,380	9,000	765	384	243	127	97	47	37	37	67
12	260	1,170	6,000	745	379	243	127	97	47	37	37	67
13	260	790	3,800	725	373	243	127	67	46	37	37	67
14	260	1,170	3,300	700	368	243	127	67	46	37	37	67
15	335	790	3,200	680	363	243	127	67	46	37	37	67
16	430	620	2,500	660	358	243	127	67	45	37	37	67
17	195	470	2,000	820	353	243	127	55	45	37	37	67
18	97	470	1,900	800	347	243	127	55	45	37	37	67
19	64	470	2,100	770	342	243	97	55	44	37	37	67
20	64	620	2,000	750	337	127	97	56	44	37	37	67
21	64	620	1,900	730	332	127	97	56	44	37	37	67
22	64	620	1,870	710	327	127	97	57	43	37	37	67
23	42	620	1,600	690	321	127	97	40	43	37	37	67
24	42	620	1,900	660	316	127	97	40	43	37	37	67
25	430	620	1,630	640	311	127	97	41	42	37	37	67
26	810	470	1,370	800	305	127	97	41	42	37	37	67
27	430	470	1,500	600	300	127	97	42	42	37	37	67
28	670	790	1,270	580	295	127	97	42	41	37	37	67
29	17,300	.....	1,210	550	290	127	97	43	41	37	37	67
30	3,210	.....	1,150	530	284	127	97	44	41	37	37	67
31	7,030	.....	1,270	.....	279	.....	97	44	.....	37	.....	67

NOTE.—Daily discharge determined from three rating curves applicable as follows: June 9, 1910, to Jan. 29, 1911, not well defined; Jan. 30 to Mar. 9, 1911, not well defined; June 7 to Aug. 16, also Oct. 11 to Dec. 31, 1911, well defined. Indirect method for shifting channels used Mar. 10 to June 6 and Aug. 17 to Oct. 10, except that for the first period, Mar. 10–22, the assumption was made that the channel scour all occurred Mar. 9.

Monthly discharge of Santa Ynez River near Lompoc, Cal., for 1911.

[Drainage area, 725 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	17,300	30	1,060	1.46	1.68	65,200	C.
February	4,930	230	1,000	1.38	1.44	55,500	B.
March	20,400	1,150	5,020	6.92	7.98	309,000	C.
April	1,400	530	836	1.15	1.28	49,700	D.
May	590	279	374	.516	.59	23,000	D.
June	274	127	204	.281	.31	12,100	B.
July	127	97	114	.157	.18	7,010	B.
August	97	40	69.1	.095	.11	4,250	C.
September	48	41	44.8	.062	.07	2,670	D.
October	40	37	37.6	.052	.06	2,310	D.
November	37	37	37.0	.051	.06	2,200	D.
December	67	37	61.2	.084	.10	3,760	D.
The year	20,400	30	741	1.02	13.86	537,000	

SALINAS RIVER BASIN.

ARROYO SECO NEAR SOLEDAD, CAL.

Location.—At Pettitt's ranch in sec. 21, T. 19 S., R. 6. E., about 15 miles south of Soledad.

Records available.—January 1, 1901 to December 31, 1911.

Drainage area.—215 square miles.

Gage.—Staff in two sections on right bank.

Channel.—Gravel and fairly permanent.

Discharge measurements.—Made from car and cable 300 feet below gage and by wading about one-fourth mile above cable at low stages.

Accuracy.—Frequent discharge measurements are secured. They plot a little scattering on the rating curve but results are considered reliable. The March flood scoured out the channel and a new rating curve was used after March 7.

Discharge measurements of Arroyo Seco near Soledad, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.	Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 11	Charles Pettitt	5.80	94	July 21	Charles Pettitt	3.88	28
15	do	8.50	1,630	31[a]	do	3.78	20
22	do	6.30	250	Aug. 17[a]	do	3.75	13
30	do	11.60	4,390	25	do	4.12	58
Feb. 14	do	7.12	704	27[a]	do	3.68	11
Mar. 1	do	7.06	656	Sept. 13[a]	F. C. Ebert	3.60	12
13	do	8.05	1,890	13[a]	Charles Pettitt	3.60	13
24	do	6.20	665	24[a]	do	3.75	13
Apr. 2	do	5.55	422	Oct. 8[a]	do	3.75	9.3
17	do	5.10	265	20[a]	do	3.73	15
30	do	4.80	206	Nov. 5[a]	do	3.80	19
May 14	do	4.58	148	19[a]	do	3.86	26
28	do	4.40	107	Dec. 3[a]	do	3.86	23
June 10	do	4.25	79	17	do	3.95	30
July 9	do	3.95	35	31	do	4.05	42

[a] Made by wading about ¼ mile above cable. All other measurements were made from cable.

Daily gage height, in feet, of Arroyo Seco near Soledad, Cal., for 1911.

[Mrs. Chas. Pettitt, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.39	9 40	7.05	5.59	4.80	4.36	4.05	3.75	3.64	3.75	3.80	3.86
2	5.39	8.50	7.10	5.55	4.78	4.35	4.04	3.72	3.63	3.76	3.80	3.86
3	5.39	8.25	11.50	5.50	4.76	4.34	4.03	3.75	3.63	3.78	3.80	3.86
4	5.39	7.90	9.60	5.40	4.75	4.33	4.01	3.78	3.63	3.78	3.80	3.89
5	5.39	7.60	11.40	5.52	4.75	4.30	4.00	3.78	3.65	3.78	3.80	3.89
6	5.39	7.40	15.90	5.70	4.73	4.28	3.98	3.78	3.65	3.78	3.80	3.95
7	5.39	7.15	18.30	5.52	4.71	4.28	3.98	3.77	3.65	3.76	3.80	3.99
8	5.39	7.00	13.20	5.50	4.69	4.26	3.97	3.77	3.65	3.75	3.80	4.00
9	5.61	6.90	10.50	5.40	4.67	4.26	3.95	3.75	3.65	3.75	3.80	4.00
10	6.30	6.80	9.60	5.35	4.65	4.25	3.94	3.75	3.65	3.75	3.82	3.98
11	5.80	7.25	8.60	5.32	4.63	4.23	3.93	3.75	3.63	3.76	4.00	3.97
12	8.85	6.95	8.40	5.25	4.62	4.22	3.91	3.75	3.63	3.76	3.95	3.95
13	11.20	7.20	8.05	5.22	4.60	4.22	3.91	3.75	3.62	3.78	3.90	3.95
14	11.85	7.15	7.80	5.20	4.58	4.22	3.90	3.73	3.61	3.75	3.89	3.92
15	8.80	7.00	7.60	5.15	4.57	4.22	3.90	3.72	3.63	3.75	3.89	3.92
16	7.50	6.90	7.41	5.10	4.56	4.22	3.90	3.71	3.65	3.75	3.88	3.91
17	6.60	6.85	7.25	5.10	4.55	4.20	3.90	3.70	3.65	3.75	3.87	3.95
18	6.50	6.70	7.00	5.05	4.52	4.20	3.89	3.70	3.65	3.74	3.86	3.95
19	6.45	6.65	6.90	5.01	4.50	4.18	3.89	3.70	3.63	3.74	3.86	3.95
20	6.35	6.60	6.80	5.00	4.48	4.16	3.89	3.69	3.63	3.73	3.86	3.94
21	6.41	6.50	6.60	5.00	4.46	4.15	3.88	3.68	3.63	3.73	3.86	3.94
22	6.30	6.48	6.40	4.98	4.45	4.15	3.88	3.67	3.70	3.73	3.86	3.94
23	6.20	6.45	6.30	4.92	4.43	4.13	3.86	3.67	3.70	3.74	3.86	3.94
24	7.70	6.42	6.20	4.90	4.42	4.13	3.85	3.67	3.75	3.75	3.86	3.94
25	7.68	6.40	6.05	4.89	4.41	4.12	3.83	3.68	3.75	3.75	3.86	3.92
26	7.30	6.33	6.00	4.86	4.40	4.11	3.81	3.68	3.75	3.75	3.86	3.92
27	7.30	6.35	5.90	4.85	4.39	4.10	3.80	3.68	3.74	3.75	3.86	3.92
28	7.78	6.42	5.80	4.85	4.40	4.10	3.80	3.67	3.74	3.75	3.86	4.03
29	12.75	.....	5.75	4.83	4.41	4.08	3.80	3.65	3.76	3.76	3.86	4.20
30	11.60	.....	5.72	4.80	4.39	4.05	3.79	3.65	3.75	3.78	3.86	4.09
31	11.00	.....	5.65	.....	4.38	.....	3.78	3.65	.....	3.78	.....	4.05

Daily discharge, in second-feet, of Arroyo Seco near Soledad, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	26	2,360	662	446	196	98	46	16	12	16	18	23
2	26	1,620	685	432	191	96	45	15	12	16	18	23
3	26	1,420	4,460	415	186	95	44	16	12	17	18	23
4	26	1,180	2,530	380	184	93	40	17	12	17	18	26
5	26	985	4,350	422	184	87	39	17	12	17	18	26
6	26	860	10,000	490	178	84	37	17	12	17	18	33
7	26	712	13,300	422	174	84	37	17	12	16	18	38
8	26	635	6,970	415	169	80	35	17	12	16	18	39
9	64	580	3,980	380	164	80	33	16	12	16	18	39
10	300	530	3,120	362	160	78	32	16	12	16	20	37
11	113	770	2,280	352	155	75	31	16	12	16	39	35
12	1,900	608	2,120	329	153	73	28	16	12	16	33	33
13	4,130	740	1,860	319	148	73	28	16	12	17	27	33
14	4,850	712	1,670	313	144	73	27	15	11	16	26	29
15	1,860	635	1,530	298	141	73	27	15	12	16	26	29
16	920	580	1,400	282	139	73	27	14	12	16	25	28
17	430	555	1,290	282	137	70	27	14	12	16	24	33
18	385	480	1,130	267	130	70	26	14	12	16	23	33
19	364	455	1,070	255	126	67	26	14	12	16	23	33
20	321	430	1,010	252	122	64	26	14	12	15	23	32
21	346	385	900	252	118	62	25	13	12	15	23	32
22	300	376	795	246	116	62	25	13	14	15	23	32
23	258	364	745	229	112	59	23	13	14	16	23	32
24	1,050	351	700	223	110	59	22	13	16	16	23	32
25	1,040	342	632	220	108	57	21	13	16	16	23	29
26	800	313	610	212	106	56	19	13	16	16	23	29
27	800	321	570	210	104	54	18	13	16	16	23	29
28	1,100	351	530	210	106	54	18	13	16	16	23	44
29	5,910	.....	510	204	108	51	18	12	16	16	23	70
30	4,570	.....	498	196	104	46	18	12	16	17	23	52
31	3,920	.....	470	.....	102	.....	17	12	.....	17	.....	46

NOTE.—Daily discharge determined from two fairly well-defined curves, applicable Jan. 1, 1910, to Mar. 7, 1911, and Mar. 8 to Dec. 31, 1911.

Monthly discharge of Arroyo Seco near Soledad, Cal., for 1911.

[Drainage area, 215 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	5,910	26	1,160	5.40	6.23	71,300	B.
February	2,360	313	702	3.27	3.40	39,000	B.
March	13,300	470	2,330	10.8	12.45	143,000	B.
April	490	196	310	1.44	1.61	18,400	B.
May	196	102	141	.656	.76	8,670	B.
June	98	46	71.5	.333	.37	4,250	B.
July	46	17	28.5	.133	.15	1,750	B.
August	17	12	14.6	.068	.08	898	C.
September	16	11	13.0	.060	.07	774	C.
October	17	15	16.1	.075	.09	990	C.
November	39	18	22.7	.106	.12	1,350	B.
December	70	23	33.9	.158	.18	2,080	B.
The year	13,300	11	405	1.88	25.51	292,000	

PAJARO RIVER BASIN.

PAJARO RIVER AT WATSONVILLE, CAL.

Location.—At highway bridge at Watsonville, about 10 miles below mouth of San Benito River, and 5 miles above the mouth of Pajaro River.

Records available.—September 14 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on first pier from right end of bridge.

Channel.—Shifting sand.

Discharge measurements.—Made from bridge or by wading.

Diversions.—Amount of diversions above the station not known.

Accuracy.—Results fair.

Discharge measurements of Pajaro River at Watsonville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 14[a]	F. C. Ebert	2.22	9.8
Oct. 19[b]	do	2.20	12
19[b]	Lasley Lee	2.20	12

[a] Made by wading under bridge at gage. [b] Made by wading 600 feet above gage.

Daily gage height, in feet, and discharge, in second-feet, of Pajaro River at Watsonville, Cal., for 1911.

[W. Poehlmann, observer.]

Day.	September.		October.		November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	2.28	17	2.42	34	2.45	38
2	.....	.....	2.35	25	2.42	34	2.46	40
3	.....	.....	2.30	19	2.40	31	2.46	40
4	.....	.....	2.28	17	2.40	31	2.48	43
5	.....	.....	2.28	17	2.40	31	2.42	34
6	.....	.....	2.28	17	2.40	31	2.45	38
7	.....	.....	2.25	15	2.40	31	2.42	34
8	.....	.....	2.30	19	2.42	34	2.42	34
9	.....	.....	2.14	8	2.42	34	2.40	31
10	.....	.....	2.16	9	2.48	43	2.40	31
11	.....	.....	2.20	11	2.50	46	2.42	34
12	.....	.....	2.28	17	2.48	43	2.45	38
13	.....	.....	2.30	19	2.45	38	2.42	34
14	2.22	13	2.32	21	2.40	31	2.40	31
15	2.25	15	2.30	19	2.38	29	2.42	34
16	2.22	13	2.32	21	2.28	17	2.45	38
17	2.22	13	2.30	19	2.44	37	2.50	46
18	2.22	13	2.30	19	2.45	38	2.45	38
19	2.24	14	2.28	17	2.44	37	2.45	38
20	2.25	15	2.28	17	2.38	29	2.42	34
21	2.25	15	2.28	17	2.38	29	2.40	31
22	2.28	17	2.26	16	2.40	31	2.42	34
23	2.28	17	2.28	17	2.40	31	2.40	31
24	2.28	17	2.32	21	2.40	31	2.40	31
25	2.29	18	2.35	25	2.40	31	2.40	31
26	2.30	19	2.45	38	2.42	34	2.40	31
27	2.30	19	2.30	19	2.45	38	2.42	34
28	2.25	15	2.32	21	2.45	38	2.45	38
29	2.30	19	2.36	26	2.45	38	2.50	46
30	2.28	17	2.40	31	2.45	38	2.52	49
31	.....	.....	2.40	31	.....	.....	2.52	49

NOTE.—Daily discharge determined from a poorly defined rating curve.

Monthly discharge of Pajaro River at Watsonville, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
September 14–30	19	13	15.8	533	C.
October	38	8	19.5	1,200	C.
November	46	17	33.9	2,020	C.
December	49	31	36.5	2,240	C.

SAN FRANCISCO BAY DRAINAGE BASINS.

SAN JOAQUIN RIVER BASIN.

SAN JOAQUIN RIVER NEAR FRIANT,[1] CAL.

Location.—At Fort Miller ranch, in the SE. ¼ sec. 34, T. 10 S., R. 21 E., about 4 miles above Friant.

Records available.—October 18, 1907, to December 31, 1910.

Drainage area.—1,640 square miles.

Gage.—Staff in two sections on left bank.

Channel.—Sand and gravel, and shifts slightly.

Discharge measurements.—Made from car and cable 25 feet below gage.

Diversion and storage.—Some storage and power developed above the station. The Fresno Flume & Irrigation Co. diverts about 10 second-feet from Stevenson Creek. This water is used for irrigation near Clovis.

Accuracy.—Results good.

Discharge measurements of San Joaquin River near Friant, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 21	J. E. Stewart	5.35	2,130
May 15	do	8.56	7,390
25	H. J. Tompkins	9.65	10,800
June 7	do	10.90	12,100
11	W. V. Hardy	12.70	18,600
15	do	12.90	19,000
Sept. 14	J. E. Stewart	3.82	625

Daily gage height, in feet, of San Joaquin River near Friant, Cal., for 1911.

[E. G. Davis, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.48	11.60	4.90	8.80	8.22	8.65	10.85	6.20	4.34	4.70	3.60	3.60
2	3.40	9.40	5.50	8.90	8.50	9.40	9.80	6.10	4.30	4.10	3.60	3.65
3	3.32	8.10	5.40	9.00	8.80	10.00	10.20	5.95	4.25	3.90	3.60	3.60
4	3.48	9.14	9.25	8.50	9.60	11.20	10.30	5.80	4.20	3.80	3.60	3.60
5	3.48	8.60	7.50	8.80	10.50	11.50	11.00	5.70	4.18	3.80	3.58	3.60
6	3.48	7.12	6.70	10.40	9.25	12.00	11.20	5.73	4.10	3.80	3.55	3.60
7	3.48	6.70	6.46	8.75	8.85	11.40	13.00	5.70	4.05	3.90	3.55	3.60
8	3.48	6.34	12.80	8.20	9.10	11.40	11.26	5.60	4.00	3.80	3.55	3.70
9	3.48	6.04	8.76	8.30	9.30	11.60	11.20	5.50	3.98	3.90	3.55	3.65
10	7.00	5.80	11.12	8.20	9.10	12.00	10.00	5.40	3.95	3.80	4.10	3.55
11	4.51	5.65	8.60	7.70	9.20	12.90	9.00	5.30	3.91	3.75	3.65	3.55
12	4.05	6.32	7.67	7.40	9.50	13.08	9.95	5.24	3.90	3.75	3.58	3.50
13	4.15	6.75	7.20	7.20	9.20	14.00	10.50	5.10	3.90	3.72	3.65	3.50
14	4.68	6.22	7.00	7.00	9.35	13.25	10.60	5.00	3.85	3.68	3.70	3.50
15	4.86	5.80	6.80	7.00	8.60	12.90	10.50	5.00	3.80	3.65	3.70	3.50
16	4.70	5.38	6.60	7.20	8.15	13.55	10.60	4.92	3.80	3.60	3.70	3.50
17	4.25	5.40	6.80	7.40	8.20	13.45	10.60	4.90	3.80	3.63	3.70	3.50
18	4.16	5.21	6.85	8.40	9.00	13.20	11.00	4.97	3.80	3.60	3.70	3.50
19	4.15	5.18	6.85	8.40	9.40	13.20	10.00	4.92	3.76	3.60	3.70	3.50
20	4.08	5.12	6.80	8.35	9.90	13.10	9.40	4.87	3.75	3.60	3.65	3.50
21	4.20	5.36	6.85	8.50	10.40	13.00	8.90	4.85	3.75	3.60	3.70	3.50
22	5.00	5.08	6.65	9.00	12.00	12.10	8.10	4.75	3.75	3.60	3.85	3.50
23	4.55	5.02	7.00	9.45	11.50	11.45	7.70	4.65	4.50	3.58	4.00	3.50
24	4.70	5.08	7.15	9.50	10.55	10.35	8.10	4.55	4.30	3.60	3.85	3.50
25	10.05	4.98	7.10	9.68	9.45	9.70	7.60	4.50	4.10	3.60	3.65	3.45
26	6.90	4.90	7.15	9.75	9.80	10.50	7.70	4.50	4.00	3.60	3.60	3.45
27	5.40	4.90	7.25	9.20	9.80	11.50	7.33	4.45	3.90	3.60	3.60	3.45
28	5.00	4.90	7.44	8.50	9.60	11.50	6.70	4.40	3.70	3.55	3.50	3.52
29	8.70	.....	7.70	8.10	9.47	11.20	6.55	4.40	3.70	3.60	3.55	3.57
30	16.10	.....	8.10	8.10	9.35	10.85	6.50	4.35	.....	3.62	3.55	3.52
31	18.00	.....	8.40	.....	9.00	.....	6.40	4.35	.....	3.60	.....	3.66

[1] Known formerly as Pollasky.

Daily discharge, in second-feet, of San Joaquin River near Friant, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	393	15,000	1,640	7,740	6,570	7,420	12,800	3,240	1,070	1,430	470	470
2	345	9,070	2,330	7,950	7,120	9,070	10,000	3,100	1,040	855	470	505
3	297	6,340	2,210	8,160	7,740	10,500	11,100	2,900	990	690	470	470
4	393	8,470	8,720	7,120	9,550	13,800	11,300	2,700	945	615	470	470
5	393	7,320	5,240	7,740	11,900	14,700	13,300	2,570	927	615	457	470
6	393	4,610	3,950	11,600	8,720	16,200	13,800	2,610	855	615	438	470
7	393	3,950	3,600	7,640	7,840	14,400	19,500	2,570	812	690	438	470
8	393	3,440	18,800	6,530	8,380	14,400	14,000	2,450	770	615	438	540
9	393	3,020	7,660	6,720	8,830	15,000	13,800	2,330	754	690	438	505
10	4,420	2,700	13,600	6,530	8,380	16,200	10,500	2,210	730	615	855	438
11	1,240	2,510	7,320	5,600	8,600	19,200	8,160	2,090	698	578	505	438
12	812	3,410	5,550	5,070	9,310	19,800	10,400	2,020	690	578	457	405
13	900	4,020	4,740	4,740	8,600	23,100	11,900	1,860	690	555	505	405
14	1,410	3,270	4,420	4,420	8,950	20,400	12,100	1,740	652	526	540	405
15	1,600	2,700	4,100	4,420	7,320	19,200	11,900	1,740	615	505	540	405
16	1,430	2,190	3,800	4,740	6,440	21,500	12,100	1,660	615	470	540	405
17	990	2,210	4,100	5,070	6,530	21,100	12,100	1,640	615	491	540	405
18	909	1,980	4,180	6,920	8,160	20,200	13,300	1,710	615	470	540	405
19	900	1,950	4,180	6,920	9,070	20,200	10,500	1,660	585	470	540	405
20	838	1,880	4,100	6,820	10,300	19,900	9,070	1,610	578	470	505	405
21	945	2,160	4,180	7,120	11,600	19,500	7,950	1,590	578	470	540	405
22	1,740	1,830	3,880	8,160	16,200	16,500	6,340	1,480	578	470	652	405
23	1,280	1,770	4,420	9,190	14,700	14,600	5,600	1,380	1,230	457	770	405
24	1,430	1,830	4,660	9,310	12,000	11,500	6,340	1,280	1,040	470	652	405
25	10,700	1,720	4,580	9,740	9,190	9,790	5,420	1,230	855	470	505	375
26	4,260	1,640	4,660	9,910	10,000	11,900	5,600	1,230	770	470	470	375
27	2,210	1,640	4,820	8,600	10,000	14,700	4,950	1,180	690	470	470	375
28	1,740	1,640	5,140	7,120	9,550	14,700	3,950	1,130	540	438	405	418
29	7,530	.....	5,600	6,340	9,240	13,800	3,730	1,130	540	470	438	450
30	31,100	.....	6,340	6,340	8,950	12,800	3,660	1,080	855	484	438	418
31	38,800	.....	6,920	.....	8,160	.....	3,520	1,080	.....	470	.....	512

NOTE.—Daily discharge determined from a well-defined rating curve. Discharge Sept. 30 estimated.

Monthly discharge of San Joaquin River near Friant, Cal., for 1911.

[Drainage area, 1,640 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	38,800	297	3,890	2.37	2.73	239,000	A.
February	15,000	1,640	3,720	2.27	2.36	207,000	A.
March	18,800	1,640	5,470	3.34	3.85	336,000	A.
April	11,600	4,420	7,140	4.35	4.85	425,000	A.
May	16,200	6,440	9,290	5.66	6.52	571,000	A.
June	23,100	7,420	15,900	9.70	10.82	946,000	A.
July	19,500	3,520	9,640	5.88	6.78	593,000	A.
August	3,240	1,080	1,880	1.15	1.33	116,000	A.
September	1,230	540	764	.466	.52	45,500	B.
October	1,430	438	570	.348	.40	35,000	B.
November	855	405	517	.315	.35	30,800	B.
December	540	375	433	.264	.30	26,600	B.
The year	38,800	297	4,930	3.00	40.81	3,570,000	

TULARE LAKE IN KINGS COUNTY CAL.

Tulare Lake is about 30 miles directly south of Fresno and 40 miles northwest of Bakersfield. The lake is roughly rectangular in shape and its greatest length is from northwest to southeast. In November, 1907, when its margin was carefully determined, the lake had an area of about 274 square miles, a maximum depth of 12.4 feet, an average length of 20 miles, and a width of 13.5 miles; the water's edge was 3 miles from the town of Corcoran, and the water surface about 12 feet below. The lake surface reached its greatest height in the summer of 1907, when it had a maximum depth of nearly 14 feet. Since July, 1907, it has been gradually subsiding.

The lake bed resembles a flat saucer. The flat, level area in the bottom has an elevation of approximately 180 feet above mean sea level and covers about 55 square miles. The lowest point on the crest of the delta ridge to the north is about 27 feet higher than the bottom of the lake. Natural overflow will not occur, therefore, until the lake has a maximum depth of nearly 30 feet and an area of nearly 1,000 square miles.

During 1906 and a part of 1907 a record of the stage of the lake was kept by means of a Government staff gage located near the entrance of Kings River near Lemoore, Cal., at the middle of sec. 4, T. 21 S., R. 20 E., M. D. B. and M. The zero of the gage was at an elevation of 175.1 feet above mean sea level, or 4 feet below the bottom of the lake (elevation 179.1 feet). On May 11, 1907, a staff gage was set near Corcoran, Cal., referred to the same datum and used until July 30, 1909.

On July 28, 1910, a vertical staff gage, in two sections, was installed on the section line just south of the corner to secs. 27, 28, 33, and 34, T. 20 S., R. 20 E., about 10 miles south of Lemoore near Stratford post office. The datum on this gage is 171.0 feet above sea level.

All published gage records have been reduced to show the actual depth of the water on the lowest point of the lake bed.

Daily gage height, in feet, of Tulare Lake near Stratford, Cal., for 1911.

[Mrs. J. E. Sanderson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.37					10.90						
2		9.55	9.90	10.65				11.68				
3									11.10			
4	9.37						11.60			10.55	10.27	
5		9.85	10.50									10.10
6				10.70	10.80	10.90		11.65				
7							11.70			10.55	10.27	
8	9.39								11.00			
9		9.87	10.30									10.10
10				10.90	10.80	10.89	11.75	11.65			10.25	

Daily gage height, in feet, of Tulare Lake near Stratford, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
11										10.50		
12	9.39	10.10										10.10
13												
14						11.25	11.75	11.50	10.80		10.20	
15			10.50	10.80						10.40		
16	9.35	9.70			10.75							10.05
17			10.52				11.75		10.75			
18						11.35				10.37	10.15	
19			10.55					11.45				
20	9.35											10.00
21		10.00		10.85	10.77		11.75			10.35		
22						11.35		11.35	10.70		10.10	
23			10.55									
24										10.35		9.90
25	9.35						11.73					
26		9.90				11.50		11.30	10.60		10.10	
27			10.50	10.85	10.77							
28										10.30		10.00
29	9.37					11.50	11.70				10.10	
30				10.80				11.20	10.57			
31										10.30		10.00

KERN RIVER AT ISABELLA, CAL.

Location.—At highway bridge in the SW. ¼ sec. 17, T. 26 S., R. 3 E., half a mile north of Isabella, 6 miles below Cowell Creek and half a mile above South Fork of Kern River.

Records available.—October 5, 1910, to December 31, 1911.

Drainage area.—1220 square miles.

Gage.—Vertical staff fastened to large cottonwood tree on left bank, 100 feet below bridge.

Channel.—Gravel and small bowlders and farily permanent.

Discharge measurements.—Made from birdge above gage and by wading.

Diversions.—The intake of the Kern River Power Co.'s canal, which diverts water around the station, is 3½ miles above the station. In addition there are several small diversions for irrigation above the station.

Accuracy.—Results are good.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Kern River at Isabella, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 7	H. J. Tompkins	1.55	133
Mar. 3	do	.80	10
Apr. 28	do	3.75	1,430
May 4	do	4.15	1,620
5	do	4.48	1,860
June 23	do	5.28	2,840
27	do	5.50	3,150
Sept. 11[a]	do	.80	8.1
Nov. 17[b]	do	.80	8.0

[a] By wading 1,200 feet below gage.

[b] Made by wading ¼ mile below gage.

Daily gage height, in feet, of Kern River at Isabella, Cal., for 1911.

[Chas. T. Shook, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.7	1.9	0.9	.....	3.5	3.9	6.0	2.3	0.9	.....	.....	.....
2	.7	.....	.....	3.4	3.6	.....	.....	2.3	.9	.....	0.8	0.6
3	.....	.....	.9	.....	3.8	.....	5.8	2.2	.....	.....	.....	.....
4	.....	1.8	.....	3.4	4.1	.....	4.8	2.1	.9	.....	.....	.....
5	.....	1.8	.....	.....	4.5	4.9	5.0	2.0	.9	0.9	.8	.....
6	.....	1.6	.....	3.7	.....	5.0	4.8	.....	.9	.9	.....	.....
7	.....	1.6	.....	.....	.....	5.0	5.0	1.8	.9	.9	.8	.....
8	.....	1.5	1.25	.....	.....	4.7	4.9	1.5	.9	.8	.....	.....
9	.7	1.2	1.9	3.7	.....	.....	.....	1.9	.9	.9	.....	.....
10	.....	.....	3.3	.....	4.3	.....	4.8	1.7	.....	.9	.8	.9
11	.....	.....	2.4	.....	4.1	.....	4.4	1.8	.8	.....	.....	.....
12	.....	1.0	.....	.....	4.1	.....	4.2	1.6	.8	.....	.9	.....
13	.....	.....	.....	.....	4.3	.....	4.0	.....	.8	.....	.....	.....
14	.....	.9	.....	.....	4.2	.....	4.7	1.5	.....	.....	.9	.....
15	.....	.....	.....	.....	3.8	.....	4.5	1.4	.8	.9	.....	.....
16	.....	.9	.....	.....	.....	.....	.....	1.2	.8	.....	.....	.....
17	.....	.9	.....	3.8	.....	.....	4.9	1.1	.....	.....	.8	.....
18	.8	.9	.....	.....	.....	.....	4.7	1.0	.8	.....	.....	.8
19	.9	.9	.....	.....	.....	.....	4.7	.9	.....	.....	1.0	.....
20	.....	.....	.....	.....	.....	.....	4.2	.....	.....	.....	.....	.....
21	.....	.9	1.8	.....	4.6	.....	3.8	.9	.....	.....	.....	.....
22	1.2	.....	.....	.....	5.4	.....	3.4	.9	.....	.....	1.0	.....
23	.....	.....	.....	.....	5.2	5.3	.....	.9	.....	.....	.....	.....
24	.....	.9	.....	3.8	5.1	4.8	3.5	.9	.....	.....	.9	.....
25	.....	.....	.....	.....	5.0	.....	3.0	.9	.8	.....	.....	.....
26	.....	.....	2.7	4.0	4.4	4.8	2.9	.9	.8	1.0	.9	.....
27	.....	.9	2.8	.....	4.2	5.25	2.8	.....	.9	1.0	.9	.....
28	.9	.....	.....	3.8	.....	5.4	2.7	.9	.....	1.1	.....	.....
29	4.1	.....	2.8	3.6	.....	.....	2.6	.9	.....	.....	.9	.....
30	3.7	.....	.....	3.6	.....	.....	.....	.9	.....	.....	.9	.....
31	6.8	.....	.....	.....	3.9	.....	2.5	.9	.....	.....	.....	.....

Daily discharge, in second-feet, of Kern River at Isabella, Cal., for 1910–11.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1910.				1910.				1910.			
1	4	8	6	11	5	8	4	21	27	8	4
2	4	8	6	12	7	8	4	22	27	8	4
3	4	8	6	13	8	8	4	23	274	8	4
4	4	8	6	14	8	8	4	24	27	8	4
5	4	8	5	15	18	8	4	25	27	8	4
6	4	8	5	16	18	8	4	26	27	8	4
7	4	8	5	17	18	8	4	27	27	7	4
8	4	8	5	18	18	8	4	28	8	7	4
9	4	8	4	19	27	8	4	29	8	7	4
10	4	8	4	20	27	8	4	30	8	7	4
								31	8	.....	4

Daily discharge, in second-feet, of Kern River at Isabella, Cal., for 1910–11—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	4	238	17	900	1,100	1,410	3,860	391	17	40	12	10
2	4	227	17	1,020	1,170	1,500	3,720	391	17	30	8	2
3	4	216	17	1,020	1,330	1,800	3,570	351	17	30	8	17
4	4	205	30	1,020	1,580	2,150	2,280	312	17	20	8	17
5	4	205	60	1,140	1,960	2,390	2,500	274	17	17	8	17
6	4	144	80	1,250	2,200	2,500	2,280	240	17	17	8	17
7	4	144	90	1,250	2,200	2,500	2,500	205	17	17	8	17
8	4	117	64	1,250	2,200	2,170	2,390	117	17	8	8	17
9	4	55	238	1,250	2,000	2,000	2,340	238	17	17	8	17
10	4	46	950	1,260	1,760	2,500	2,280	174	12	17	8	17
11	5	36	433	1,270	1,580	3,000	1,860	205	8	17	12	17
12	5	27	300	1,280	1,580	3,500	1,670	144	8	17	17	17
13	6	22	230	1,290	1,760	3,380	1,500	130	8	17	17	17
14	6	17	170	1,300	1,670	3,300	2,170	117	8	17	17	12
15	7	17	120	1,310	1,330	3,200	1,960	93	8	17	14	8
16	7	17	100	1,320	1,240	3,380	2,180	55	8	17	11	8
17	8	17	110	1,330	1,150	3,500	2,390	40	8	17	8	8
18	8	17	120	1,330	1,230	3,430	2,170	27	8	17	18	8
19	17	17	140	1,330	1,400	3,370	2,170	17	8	17	27	8
20	17	17	160	1,330	1,650	3,300	1,670	17	8	17	27	8
21	17	17	205	1,330	2,060	3,180	1,330	17	8	27	27	8
22	55	17	260	1,330	3,000	3,050	1,020	17	8	27	27	17
23	50	17	340	1,330	2,740	2,870	1,060	17	8	27	22	17
24	45	17	440	1,330	2,620	2,280	1,100	17	8	27	17	17
25	35	17	510	1,420	2,500	2,280	750	17	8	27	17	17
26	30	17	574	1,500	1,860	2,280	686	17	8	27	17	17
27	25	17	628	1,550	1,670	2,800	628	17	17	27	17	27
28	17	17	628	1,330	1,570	3,000	574	17	17	40	17	27
29	1,580	.....	628	1,170	1,490	3,200	524	17	30	27	17	27
30	1,250	.....	700	1,170	1,440	3,500	500	17	50	17	17	27
31	5,170	.....	800	.....	1,410	.....	477	17	.....	17	.....	27

NOTE.—Daily discharge determined from a rating curve well defined below 4,000 second-feet. Discharge interpolated for days on which gage was not read except Oct. 1–4 and 24 to 27, 1910; Jan. 20–21, Mar. 4–7, 12–20, 22–25, Mar. 30 to Apr. 1, Apr. 27, May 6–9, 16–20, 28–30, June 2–4, 9–22, 29–30, Sept. 28 to Oct. 4, Oct. 29–31, Dec. 3–9, and 19 to 31, discharge for which was estimated from the discharge at Bakersfield. Estimated values only approximate.

Monthly discharge of Kern River at Isabella, Cal., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1910.					
October	274	4	21.4	1,320	C.
November	8	7	7.9	470	C.
December	6	4	4.4	271	D.
1911.					
January	5,170	4	271	16,700	C.
February	238	17	69.2	3,840	B.
March	950	17	295	18,100	B.
April	1,550	900	1,260	75,000	B.
May	3,000	1,100	1,760	108,000	B.
June	3,500	1,410	2,760	164,000	B.
July	3,860	477	1,810	111,000	A.
August	391	17	120	7,380	B.
September	50	8	13.6	809	C.
October	40	8	21.7	1,330	C.
November	27	8	14.9	887	C.
December	27	2	15.7	965	D.
The year	5,170	2	703	508,000	

Combined daily discharge, in second-feet, of Kern River and power canal at Isabella, Cal., for 1910–11.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1910.				1910.				1910.			
1	260	286	224	11	222	261	295	21	358	256	286
2	262	276	234	12	255	256	351	22	349	255	280
3	262	261	240	13	296	255	307	23	274	255	279
4	259	291	318	14	291	265	284	24	290	266	280
5	260	296	308	15	306	265	269	25	315	256	282
6	255	286	271	16	359	261	267	26	310	251	260
7	227	271	283	17	344	261	277	27	308	246	251
8	225	266	280	18	368	255	259	28	286	243	254
9	221	261	274	19	372	256	261	29	281	230	254
10	221	259	278	20	367	255	279	30	274	234	254
								31	268	.....	254

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	254	811	442	1,490	1,690	2,000	4,450	980	452	513	324	292
2	249	667	446	1,610	1,760	2,090	4,310	980	447	445	315	285
3	246	789	470	1,610	1,920	2,390	4,160	940	442	422	316	297
4	254	778	512	1,610	2,170	2,740	2,870	901	436	400	307	300
5	257	778	568	1,730	2,550	2,980	3,090	863	423	381	310	298
6	254	717	578	1,840	2,790	3,090	2,870	829	414	375	309	291
7	254	717	573	1,840	2,790	3,090	3,090	794	405	373	306	321
8	247	690	609	1,840	2,790	2,760	2,980	706	397	351	297	296
9	251	628	828	1,840	2,590	2,590	2,930	827	386	354	301	282
10	330	614	1,540	1,850	2,350	3,090	2,870	763	375	351	291	287
11	424	587	1,020	1,860	2,170	3,590	2,450	794	368	350	392	289
12	308	572	889	1,870	2,170	4,090	2,260	733	363	347	355	283
13	318	523	819	1,880	2,350	3,970	2,090	719	357	342	312	279
14	313	590	759	1,890	2,260	3,890	2,760	706	349	338	338	269
15	300	527	709	1,900	1,920	3,790	2,550	682	343	334	333	270
16	300	504	689	1,910	1,830	3,970	2,770	644	336	326	342	275
17	289	460	699	1,920	1,740	4,090	2,980	629	333	321	334	279
18	285	493	709	1,920	1,820	4,020	2,760	616	329	319	330	281
19	298	479	729	1,920	1,990	3,960	2,760	606	324	317	339	268
20	294	493	749	1,920	2,240	3,890	2,260	596	320	317	339	263
21	314	471	794	1,920	2,650	3,770	1,920	592	318	326	336	294
22	537	448	849	1,920	3,590	3,640	1,610	565	320	327	334	264
23	456	447	929	1,920	3,330	3,460	1,650	554	372	326	324	273
24	411	455	1,030	1,920	3,210	2,870	1,690	539	363	326	306	306
25	598	448	1,100	2,010	3,090	2,870	1,340	523	349	324	310	277
26	592	447	1,160	2,090	2,450	2,870	1,280	513	339	322	312	245
27	538	453	1,220	2,140	2,260	3,390	1,220	504	340	323	310	253
28	438	460	1,220	1,920	2,160	3,590	1,160	597	327	343	306	286
29	2,140	.....	1,220	1,760	2,080	3,790	1,110	486	372	342	306	308
30	1,820	.....	1,290	1,760	2,030	4,090	1,090	473	605	333	302	280
31	5,750	.....	1,390	.....	2,000	.....	1,070	461	.....	335	.....	254

Combined monthly discharge of Kern River and power canal at Isabella, Cal., for 1910–11.

[Drainage area, 1,220 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
October	372	221	289	0.237	0.27	17,800	A.
November	296	230	261	.214	.24	15,500	A.
December	351	224	274	.225	.26	16,800	A.
1911.							
January	5,750	246	623	.511	.59	38,800	B.
February	811	447	573	.470	.49	31,800	A.
March	1,540	442	856	.702	.81	52,600	A.
April	2,140	1,490	1,850	1.52	1.70	110,000	B.
May	3,590	1,690	2,350	1.93	2.22	144,000	B.
June	4,090	2,000	3,350	2.75	3.07	199,000	B.
July	4,450	1,070	2,400	1.97	2.27	148,000	A.
August	980	461	681	.558	.64	41,900	A.
September	605	318	377	.309	.34	22,400	A.
October	513	317	352	.289	.33	21,600	A.
November	392	291	321	.263	.29	19,100	A.
December	321	245	282	.231	.27	17,300	A.
The year	5,750	245	1,170	.959	13.02	846,000	

KERN RIVER POWER CO.'S CANAL NEAR KERNVILLE, CAL.

Location.—At Beattie ranch, 1,000 feet below intake, and about three-fourths of a mile below Kernville.

Records available.—January 1, 1910 to December 31, 1911.

Gage.—Automatic gage on left bank at short flume. A vertical staff is located just below flume in concrete lined section of canal.

Discharge measurements.—Made in flume at automatic gage.

Accuracy.—Results are considered excellent.

Cooperation.—Daily discharge records furnished by Kern River Power Co., through G. O. Newman, chief engineer.

This canal diverts from Kern River about half a mile below Kernville. Its total length is about 10 miles and it is concrete lined except where flume is required. The power house is located in the canyon at Borel, where the water is returned to the river. The power is transmitted to Los Angeles.

Discharge measurements of Kern River Power Co.'s canal near Kernville, Cal., in 1910–11.

Date.	Hydrographer.	Gage height.	Discharge.
1910.		*Feet.*	*Sec.-ft.*
Oct. 5	J. E. Stewart	4.18	229
Nov. 21	Tompkins and Garlock	4.38	252
1911.			
Feb. 7	H. J. Tompkins	8.10	554
Mar. 3	do	7.00	448
Apr. 29	do	8.50	587
Sept. 14	do	5.95	338
Nov. 17	do	5.70	322

NOTE.—These measurements were made from plank bridge over flume. Gage heights referred to various gages installed and used by the United States Geological Survey.

Daily discharge, in second-feet, of Kern River Power Co.'s canal near Kernville, Cal., for 1910–11.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	580	580	592	592	592	592	582	511	298	256	278	218
2	580	580	592	592	592	592	582	488	286	258	268	228
3	580	555	592	592	592	592	582	467	282	258	253	234
4	580	580	592	592	592	592	582	447	297	255	283	312
5	580	555	592	592	592	592	582	408	301	256	288	303
6	511	548	341	592	592	592	567	433	275	251	278	266
7	580	540	592	592	592	592	550	414	268	223	263	278
8	580	550	592	592	592	592	565	404	263	221	258	275
9	580	548	592	592	592	592	582	389	258	217	253	270
10	580	545	592	592	592	592	582	380	255	217	251	274
11	580	545	592	592	592	592	582	370	253	217	253	291
12	580	560	592	592	592	592	582	363	249	248	248	347
13	580	558	592	592	592	592	582	355	246	288	247	303
14	580	555	592	592	592	580	582	348	248	283	257	280
15	453	564	592	592	592	582	574	345	278	288	257	265
16	433	574	592	592	592	582	569	335	380	341	253	263
17	433	574	592	592	592	582	540	326	453	326	253	273
18	433	574	592	592	592	582	582	322	394	350	247	255
19	433	580	592	592	592	582	582	318	355	345	248	257
20	433	586	592	592	592	582	574	314	331	340	247	275
21	433	592	592	592	592	582	582	312	312	331	248	282
22	579	592	592	592	592	582	582	312	297	322	247	276
23	580	592	592	592	592	582	582	321	287	0	247	275
24	580	592	592	592	592	582	582	331	278	263	258	276
25	580	592	592	592	592	582	574	346	272	288	248	278
26	580	592	592	592	592	582	569	336	268	283	243	256
27	580	592	592	592	592	582	560	326	265	281	239	247
28	580	592	592	592	592	582	582	317	261	278	236	250
29	580	.....	592	592	592	582	582	312	267	273	223	250
30	580	.....	592	592	592	582	560	305	255	266	227	250
31	580	.....	592	.....	592	.....	555	299	.....	260	.....	250
1911.												
1	250	573	425	589	589	589	589	589	435	473	312	282
2	245	440	429	589	589	589	589	589	430	415	307	283
3	242	573	453	589	589	589	589	589	425	392	308	280
4	250	573	482	589	589	589	589	589	419	380	299	283
5	253	573	508	589	589	589	589	589	406	364	302	281
6	250	573	498	589	589	589	589	589	397	358	301	274
7	250	573	483	589	589	589	589	589	388	356	298	304
8	243	573	545	589	589	589	589	589	380	343	289	279
9	247	573	590	589	589	589	589	589	369	337	293	265
10	326	568	589	589	589	589	589	589	363	334	283	270
11	419	551	589	589	589	589	589	589	360	333	380	272
12	303	545	589	589	589	589	589	589	355	330	338	266
13	312	501	589	589	589	589	589	589	349	325	295	262
14	307	573	589	589	589	589	589	589	341	321	321	257
15	293	510	589	589	589	589	589	589	335	317	319	262
16	293	487	589	589	589	589	589	589	328	309	331	267
17	281	443	589	589	589	589	589	589	325	304	326	271
18	277	476	589	589	589	589	589	589	321	302	312	273
19	281	462	589	589	589	589	589	589	316	300	312	260
20	277	476	589	589	589	589	589	579	312	300	312	255
21	297	454	589	589	589	589	589	575	310	299	309	286
22	482	431	589	589	589	589	589	548	312	300	307	247
23	406	430	589	589	589	589	589	537	364	299	302	256
24	366	438	589	589	589	589	589	522	355	299	289	289
25	563	431	589	589	589	589	589	506	341	297	293	260
26	562	430	589	589	589	589	589	496	331	295	295	228
27	513	436	589	589	589	589	589	487	323	296	293	226
28	421	443	589	589	589	589	589	480	310	303	289	259
29	565	.....	589	589	589	589	589	469	342	315	289	281
30	573	.....	589	589	589	589	589	456	555	316	285	253
31	582	.....	589	.....	589	.....	589	444	.....	318	.....	227

NOTE.—Discharge interpolated Jan. 1–3, 23, Feb. 6, 13, 15, 19, 20, Oct. 30, Dec. 24, 28–31, 1910. Oct. 23, 1910, water turned out of canal; discharge estimated 0 second-feet. Discharge interpolated Feb. 27, Mar. 11, Aug. 16, Sept. 12, Oct. 30, Nov. 12 and 19, 1911. Daily discharge record except as noted furnished by the Kern River Power Co. Interpolations and estimates made by engineers of United States Geological Survey.

Monthly discharge of Kern River Power Co.'s canal near Kernville, Cal., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1910.				
January	580	433	545	33,500
February	592	540	571	31,700
March	592	341	584	35,900
April	592	592	592	35,200
May	592	592	592	36,400
June	592	580	586	34,900
July	582	540	575	35,400
August	511	299	363	22,300
September	453	246	291	17,300
October	350	0	267	16,400
November	288	223	253	15,100
December	347	218	270	16,600
The year	592	0	457	331,000
1911				
January	582	242	353	21,700
February	573	430	504	28,000
March	590	425	560	34,400
April	589	589	589	35,000
May	589	589	589	36,200
June	589	589	589	35,000
July	589	589	589	36,200
August	589	444	558	34,300
September	555	310	363	21,600
October	473	295	320	19,700
November	380	283	306	18,200
December	304	226	266	16,400
The year	590	226	465	337,000

NOTE.—Monthly values computed by United States Geological Survey.

KERN RIVER NEAR BAKERSFIELD, CAL.[1]

Location.—At mouth of lower canyon, in sec. 2, T. 29 S., R. 28 E., 5 miles northeast of Bakersfield.

Records available.—January 1, 1894, to June 30, 1907, and March 1, 1908, to December 31, 1911.

Drainage area.—2,345 square miles.

Gage.—Automatic water-stage register at footbridge.

Discharge measurements.—Made from footbridge at gage.

Diversions.—Several small diversions on main river and South Fork for irrigation. Diversions at and below Kernville for power are returned above the station.

Accuracy.—Results are good.

Cooperation.—Daily discharge furnished by Kern County Land Co. through A. K. Warren, engineer.

[1] This station known formerly as at "first point of measurement."

Daily discharge, in second-feet, of Kern River near Bakersfield, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	318	3,437	593	2,240	2,481	2,607	3,210	1,200	492	600	366	366
2	294	1,906	599	2,398	2,543	2,588	3,004	1,192	487	573	354	341
3	281	1,489	601	2,397	2,603	2,603	3,122	1,151	474	530	376	335
4	288	1,381	657	2,420	2,830	2,842	3,270	1,076	477	495	365	334
5	286	1,415	718	2,474	3,095	3,179	3,203	1,021	482	456	369	361
6	286	1,205	724	2,883	3,253	3,466	3,232	988	471	437	381	351
7	289	1,083	719	2,539	3,164	3,815	3,126	959	445	429	381	363
8	289	1,003	737	2,350	3,224	3,518	3,202	922	444	418	388	364
9	294	952	1,353	2,235	3,237	3,419	3,177	900	445	412	369	365
10	321	905	2,263	2,194	3,086	3,519	3,010	873	440	410	364	363
11	477	874	2,099	2,072	2,937	3,924	2,912	851	437	414	382	350
12	504	813	1,599	1,938	2,907	4,287	2,620	832	428	393	398	345
13	398	765	1,406	1,841	2,921	4,555	2,572	787	410	393	393	335
14	391	818	1,258	1,769	2,972	4,551	2,667	726	392	396	392	330
15	376	806	1,162	1,703	2,906	4,355	2,780	682	393	398	401	340
16	403	729	1,126	1,685	2,678	4,230	2,884	654	383	389	393	346
17	415	688	1,144	1,743	2,598	4,496	2,876	634	378	389	386	366
18	391	683	1,236	1,819	2,597	4,623	2,963	619	386	381	380	381
19	385	699	1,266	1,985	2,690	4,562	2,951	603	390	365	368	367
20	375	702	1,298	2,263	2,878	4,396	2,874	593	383	368	367	360
21	393	673	1,346	2,328	3,136	4,198	2,536	599	370	368	365	366
22	579	629	1,403	2,366	3,368	4,098	2,245	601	371	372	362	360
23	625	618	1,451	2,494	3,623	3,742	2,092	581	391	378	351	334
24	545	598	1,543	2,693	3,814	3,505	2,021	543	424	398	333	362
25	657	589	1,585	2,792	3,672	3,219	1,887	526	421	399	321	372
26	905	569	1,607	2,943	3,377	3,179	1,688	525	398	384	326	327
27	728	574	1,653	3,044	3,075	3,487	1,530	518	415	374	348	301
28	630	593	1,670	2,860	2,938	3,752	1,431	508	426	371	327	341
29	703	.....	1,724	2,651	2,911	3,726	1,347	495	424	368	296	385
30	2,786	.....	1,851	2,515	2,783	3,525	1,262	484	441	374	336	389
31	3,667	.....	2,029	.....	2,712	.....	1,208	488	.....	384	.....	346

Monthly discharge of Kern River near Bakersfield, Cal., for 1911.

[Drainage area, 2,345 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	3,667	281	622	0.265	0.31	38,200
February	3,437	569	971	.414	.43	53,900
March	2,263	593	1,300	.554	.64	79,900
April	3,044	1,685	2,320	.989	1.10	138,000
May	3,814	2,481	3,000	1.28	1.48	184,000
June	4,623	2,588	3,730	1.59	1.77	222,000
July	3,270	1,208	2,550	1.09	1.26	157,000
August	1,200	484	746	.318	.37	45,900
September	492	370	424	.181	.20	25,200
October	600	365	413	.176	.20	25,400
November	401	296	365	.156	.17	21,700
December	389	301	352	.150	.17	21,600
The year	4,623	281	1,400	.597	8.10	1,010,000

SOUTH FORK OF KERN RIVER NEAR ONYX, CAL.

Location.—Three-fourths of a mile north of the Kernville-Walker Pass Road, on the Rankin ranch, in the NE. ¼ SW. ¼ sec. 24, T. 25 S., R. 35 E., about 5 miles northeast of Onyx.

Records available.—September 12 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Inclined staff on left bank 200 feet below intake of lower Rankin ditch. Installed November 16, 1911, at about the same location and with same datum as temporary gage previously used.

Channel.—Sand and fine gravel; fairly permanent.

Discharge measurements.—Made from car and cable 60 feet below gage and by wading.

Diversions.—Three small irrigation ditches head above the station.

Discharge measurements of South Fork of Kern River near Onyx, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 12[a]	H. J. Tompkins	1.85	34
Nov. 16[b]	....do	1.85	63

[a] Made by wading one-fourth mile above gage. Powers ditch was diverting 2.7 second-feet.
[b] Made by wading 100 feet below new inclined gage installed this date. Powers ditch was diverting 1.1 second-feet. (Powers ditch diverts from South Fork of Kern River above the gage.)

Daily gage height, in feet, of South Fork of Kern River near Onyx, Cal., for 1911.

[Laurence Rankin, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	2.00	1.75	1.80	16	1.85	1.71	1.81	1.85
2	.....	1.92	1.75	1.80	17	1.73	1.70	1.78	1.85
3	.....	1.87	1.73	1.88	18	1.73	1.70	1.79	1.85
4	.....	1.84	1.72	1.88	19	1.72	1.70	1.80	1.85
5	.....	1.83	1.71	1.88	20	1.72	1.70	1.80	1.85
6	.....	1.83	1.71	1.88	21	1.69	1.70	1.80	1.85
7	.....	1.82	1.71	1.88	22	1.74	1.70	1.80	1.85
8	.....	1.71	1.71	1.80	23	1.75	1.70	1.80	1 85
9	.....	1.71	1.71	1.80	24	1.73	1.70	1.80	1.88
10	.....	1.71	1.71	1.80	25	1.72	1.70	1.80	1.90
11	.....	1.70	1.71	1.85	26	1.72	1.70	1.85	1.90
12	1.85	1.70	1.60	1.87	27	1.70	1.70	1.90	1.90
13	1.85	1.70	1.60	1.87	28	1.60	1.78	1.90	1.90
14	1.81	1.70	1.60	1.87	29	2.10	1.80	1.87	1.90
15	1.79	1.72	1.70	1.85	30	2.90	1.80	1.78	1.85
					31	.....	1.80	.....	1.85

SOUTH FORK OF KERN RIVER AT ISABELLA, CAL.

Location.—At highway bridge at Isabella, in the NW. ¼ sec. 20, T. 26 S., R. 33 E., half a mile above junction with Kern River.

Records available.—October 5, 1910 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to middle bent of bridge.

Channel.—Sand and somewhat shifting.

Discharge measurements.—Made from bridge at gage and by wading.

Diversions.—Twenty-eight irrigation ditches, varying in capacity from 8 to 20 second-feet, head above the station.

Accuracy.—On account of shifting channel and lack of high water measurements discharge withheld for 1911.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of South Fork of Kern River at Isabella, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 6	H. J. Tompkins	1.30	262
Mar. 3	do	.80	121
Apr. 28	do	2.40	702
May 2[a]	do	2.15	647
June 24[b]	do	1.70	[d] 192
Sept. 14	do	.35	13
Nov. 17[c]	do	.45	21

[a] Made from upstream side of bridge.
[b] Made by wading below bridge.
[c] Made by wading 3 feet below gage.
[d] Discharge in two channels, 157 and 35 sec.-feet, respectively.

Daily gage height, in feet, of South Fork of Kern River at Isabella, Cal., for 1911.

[C. T. Shook and Roy Oldfield, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.6	0.9		2.1	1.7	1.3	0.8		0.7		0.5
2				1.9	2.15		1.3	.9		.7	0.5	.5
3			.8	1.9	2.15		1.3	.9		.7	.5	.6
4		1.5			2.2		1.2	.9			.4	.6
5		1.5		2.0	2.4	1.7	1.2			.6	.5	.6
6		1.3		2.1		1.7				.6	.4	.6
7		1.0				1.8				.6	.4	.6
8		1.0	1.0			1.95						.6
9	3.0	0.9	2.05							.6	.4	.6
10		.9	2.25	1.9	2.3					.6	.4	.6
11			1.8	1.9	2.2							
12			.9		2.3					.5		
13		.9			2.3		1.0			.5	.5	
14		.9			2.2		1.0	.4	0.4	.5	.4	
15					2.0		1.0	.4	.4	.5	.4	
16		.9	.6				1.0	.4	.4	.5	.4	
17		.9					1.0			.5	.5	
18	4.0						1.0			.5	.5	.6
19	3.0						1.0			.5	.5	
20		.8	.5		2.0					.5	.5	
21			1.4	2.1	2.1					.5	.5	
22	6.0	.9	2.4		2.1					.5	.5	
23		.9	2.5		2.05	1.7				.5		.6
24			2.5	2.3	2.05	1.7			.4	.5	.5	
25					2.0				.4	.6	.5	.6
26		.9	1.6	2.4	2.0				.4	.6	.5	.6
27		.9	1.5		1.9	1.6			.4	.6		
28	.9	.9	1.5	2.4		1.5			.4	.6	.5	.6
29	1.0		1.5	2.3					.9		.5	.6
30	1.8			2.2			.8		.9		.5	.6
31	2.9		1.7		1.7		.9			.6		.6

ERSKINE CREEK NEAR ISABELLA, CAL.

Location.—At ford at mouth of canyon, 2¾ miles above junction with Kern River, in the NE. ¼ sec. 9, T. 27 S., R. 33 E., 5 miles south of Isabella.

Records available.—February 7 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to willow tree, about 80 above ford on left bank.

Channel.—Sand and gravel. Two channels at high stages.

Discharge measurements.—Made by wading near the gage.

Diversions.—A small ditch diverts water for irrigation about 9 miles above the station.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements can be made.

Discharge measurements of Erskine Creek near Isabella, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 7	H. J. Tompkins	2.50	8.7
Apr. 29	do	2.60	4.1
June 26	do	2.30	1.3
Sept. 14	do	2.10	.3

NOTE.—These measurements were made by wading at different sections.

Daily gage height, in feet, of Erskine Creek near Isabella, Cal., for 1911.

[C. T. Shook and Roy Oldfield, observers.]

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1											
2									2.1		2.6
3			2.9							2.3	
4											
5											
5											
7	2.5										
8		2.9		2.5							
9											
10											
11											2.68
12									2.3		
13											
14	2.4							2.1			
15											
16											
17		2.8									
18			2.8								
19											
20											
21											
22											
23										2.3	
24	2.8										
25											
26		3.0	2.7		2.3			2.1			
27											
28										2.4	
29			2.6								
30								2.1			
31											

BASIN CREEK NEAR HAVALAH, CAL.

Location.—At highway bridge on Caliente-Havalah road at Rankin ranch, in Walkers Basin, about 10 miles southwest of Havalah.
Records available.—February 8 to November 30, 1911.
Drainage area.—36.2 square miles.
Gage.—Vertical staff on left bank at bridge.
Channel.—Sand and gravel; will shift at high water.
Discharge measurements.—Made by wading below bridge.
Diversions.—Rankin ditch diverts above the station.
Accuracy.—Results are fair.
Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Basin Creek near Havalah, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 8	H. J. Tompkins	0.90	7.3
May 6	.....do	.75	4.4
June 22	.....do	.73	3.9
Sept. 15	.....do	.75	3.8

NOTE.—These measurements were made by wading at various sections.

Daily gage height, in feet, of Basin Creek near Havalah, Cal., for 1911.

[L. P. Allen and W. Rankins, observers.]

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1								0.8			
2						0.6			0.9	0.9	
3				0.6	0.6						
4								.8			
5						.6	0.65				
6				.75	.6				.9	.9	
7			0.9	.9				.85			
8	0.9										
9					.6	.6	.7		1.0		
10										.9	
11			.9	.6				.8			
12					.6		.75				
13						.6			1.0		
14			.9							.9	
15				.6	.6		.7	.8			
16			.6			.6			.9		
17	.9							.8			
18			.6	.6	.6		.7				
19						.75			.9	.9	
20		0.9						.85			
21			.6	.9	.8		.72				
22					.73	.7					
23			.6					.9	.9	.9	
24	.9				.85		.7				
25				.9		.75					
26								.9	.9		
27			.6		.9					.9	
28				.6		.75	.75				
29									.9		
30		.9	.6		.85			.9		.9	
31				.6		.7	.7				

NOTE.—No record during December, 1911.

Daily discharge, in second-feet, of Basin Creek near Havalah, Cal., for 1911.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	7	7	7	2	2	4	3	5	7	7
2	7	7	7	2	2	2	3	5	7	7
3	7	7	7	2	2	2	2	5	7	7
4	7	7	7	3	2	2	2	5	7	7
5	7	7	7	3	2	2	2	5	7	7
6	7	7	7	4	2	2	2	6	7	7
7	7	7	7	7	2	2	2	6	8	7
8	7	7	7	6	2	2	3	6	9	7
9	7	7	7	4	2	2	3	6	10	7
10	7	7	7	3	2	2	3	5	10	7
11	7	7	7	2	2	2	4	5	10	7
12	7	7	7	2	2	2	4	5	10	7
13	7	7	7	2	2	2	4	5	10	7
14	7	7	7	2	2	2	3	5	9	7
15	7	7	4	2	2	2	3	5	8	7
16	7	7	2	2	2	2	3	5	7	7
17	7	7	2	2	2	3	3	5	7	7
18	7	7	2	2	2	3	3	5	7	7
19	7	7	2	4	3	4	3	6	7	7
20	7	7	2	5	4	4	3	6	7	7
21	7	7	2	7	5	3	3	6	7	7
22	7	7	2	7	4	3	3	7	7	7
23	7	7	2	7	5	3	3	7	7	7
24	7	7	2	7	6	4	3	7	7	7
25	7	7	2	7	6	4	3	7	7	7
26	7	7	2	5	7	4	4	7	7	7
27	7	7	2	4	7	4	4	7	7	7
28	7	7	2	2	7	4	4	7	7	7
29	.....	7	2	2	6	4	4	7	7	7
30	.....	7	2	2	6	3	3	7	7	7
31	.....	7	.....	2	.....	3	3	.....	7	.....
Mean	7.0	7.0	4.4	3.6	3.4	2.8	3.1	5.8	7.7	7.0

NOTE.—Daily discharge determined from a fairly-defined rating curve. Discharge interpolated for days on which the gage was not read; interpolated values are only roughly approximate, particularly those from February to June, although an examination of the precipitation records does not indicate that there was any material rise during these months.

Monthly discharge of Basin Creek near Havalah, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
February	7	7	7.0	389
March	7	7	7.0	430
April	7	2	4.4	262
May	7	2	3.6	221
June	7	2	3.4	202
July	4	2	2.8	172
August	4	2	3.1	191
September	7	5	5.8	345
October	10	7	7.7	473
November	7	7	7.0	417
The period	.....	.....	.....	3,100

NOTE.—Discharge only roughly approximate.

WHITE RIVER NEAR HOT SPRINGS, CAL.

Location.—On Vaughn ranch, 1 mile east of White River and Hot Springs stage road, about 5 miles southwest of Hot Springs.

Records available.—January 18 to December 31, 1911

Drainage area.—Not measured.

Gage.—Vertical staff on right bank fastened to a willow tree about 150 feet above observer's house.

Channel.—Sand and gravel.

Discharge measurements.—Made by wading.

Cooperation.—Gage-height record furnished by David Vaughn. Discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements can be made.

Discharge measurements of White River near Hot Springs, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 18	H. J. Tompkins	1.4	2.0
May 11	do	1.6	4.0

Daily gage height, in feet, of White River near Hot Springs, Cal., for 1911.

[David Vaughn, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.9	1.7	.....	1.7	1.5	1.3	.....	.....	1.25	1.2	1.2
2	.....	1.8	1.7	.....	1.7	1.5	1.3	.....	.....	1.25	1.2	1.2
3	.....	1.7	1.8	.....	1.7	1.5	1.3	.....	.....	1.3	1.2	1.2
4	.....	2.0	1.9	.....	1.7	1.5	1.25	.....	.....	1.3	1.2	1.4
5	.....	1.8	1.8	.....	1.7	1.5	1.25	.....	.....	1.3	1.2	1.4
6	.....	1.7	1.8	.....	1.7	1.45	1.25	.....	.....	1.3	1.2	1.3
7	.....	1.7	1.7	.....	1.7	1.45	1.25	.....	.....	1.25	1.2	1.4
8	.....	1.6	2.2	.....	1.7	1.45	1.2	.....	.....	1.25	1.2	1.4
9	.....	1.6	2.2	.....	1.7	1.4	1.2	.....	.....	1.25	1.2	1.3
10	.....	1.6	2.7	.....	1.65	1.4	1.2	.....	.....	1.25	1.7	1.3
11	.....	1.7	2.7	.....	1.6	1.4	1.2	.....	.....	1.25	1.5	1.3
12	.....	1.5	2.3	.....	1.6	1.4	1.2	.....	.....	1.25	1.4	1.3
13	.....	1.95	2.1	.....	1.6	1.4	1.2	.....	.....	1.25	1.4	1.3
14	.....	2.2	2.0	1.8	1.6	1.4	1.2	.....	.....	1.25	1.3	1.25
15	.....	1.9	2.0	1.8	1.6	1.4	1.15	.....	.....	1.25	1.3	1.25
16	.....	1.8	1.9	1.8	1.5	1.4	1.15	.....	.....	1.25	1.3	1.25
17	.....	1.8	1.9	1.8	1.5	1.4	1.2	.....	.....	1.25	1.4	1.5
18	1.4	1.8	1.9	1.8	1.5	1.4	1.18	.....	.....	1.25	1.3	1.45
19	1.4	1.8	1.8	1.8	1.5	1.4	1.2	.....	.....	1.25	1.3	1.45
20	1.4	1.8	1.8	1.75	1.5	1.4	1.2	.....	.....	1.25	1.3	1.4
21	2.1	1.8	2.0	1.7	1.5	1.35	1.2	.....	.....	1.2	1.25	1.4
22	1.7	1.8	2.0	1.7	1.5	1.35	1.15	.....	.....	1.2	1.25	1.4
23	1.6	1.7	1.9	1.7	1.5	1.35	1.15	.....	.....	1.2	1.25	1.3
24	1.95	1.7	2.1	1.7	1.5	1.35	1.15	.....	.....	1.2	1.25	1.3
25	2.0	1.7	2.0	1.7	1.5	1.35	1.15	.....	1.15	1.2	1.25	1.3
26	2.0	1.7	1.9	1.7	1.5	1.3	1.15	.....	1.15	1.2	1.25	1.3
27	1.7	1.8	1.9	1.9	1.5	1.3	1.15	.....	1.15	1.2	1.25	1.3
28	1.8	1.8	.....	1.8	1.5	1.3	1.15	.....	1.2	1.25	1.2	1.4
29	.1	.....	.....	1.8	1.5	1.3	1.1	.....	1.2	1.25	1.2	1.4
30	1.9	.....	.....	1.7	1.5	1.3	.....	.....	1.2	1.25	1.2	1.5
31	2.3	.....	.....	.....	1.5	.....	.....	.....	.....	1.25	.....	1.4

NOTE.—No water in river July 30 to September 24.

DEER CREEK AT HOT SPRINGS, CAL.

Location.—Below footbridge at forest supervisor's headquarters in the Sequoia National Forest, about half a mile below Hot Springs. Tyler Creek enters about 2½ miles below the station.

Records available.—October 7, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to an alder tree on left bank, 30 feet below footbridge.

Channel.—Sand, gravel, and bowlders.

Discharge measurements.—Made from highway bridge, 100 feet below gage or by wading.

Diversions.—Irrigation ditches head above the station.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are made.

Discharge measurements of Deer Creek at Hot Springs, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 15	H. J. Tompkins	0.55	6.1
Mar. 7	do	.50	7.2
May 13	do	.70	12

NOTE.—Measurements were made by wading.

Daily gage height, in feet, of Deer Creek at Hot Springs, Cal., for 1911.

[A. B. Patterson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.51	0.85	0.58	0.82	0.80	.....	.....	0.30	0.35	0.39	0.41	0.46
2	.....	.....	.....	.80	.80	.....	0.44	.31	.35	.40	.42	.46
3	.....	.65	.68	.78	.80	0.60	.45	.31	.36	.40	.42	.49
4	.....	.80	.70	.77	.81	.59	.45	.31	.37	.40	.42	.50
5	.51	.69	.69	1.06	.81	.59	.44	.31	.37	.39	.41	.52
6	.....	.63	.67	1.05	.80	.60	.43	.35	.37	.39	.42	.60
7	.....	.....	.65	1.00	.80	.59	.43	.34	.37	.39	.42	.57
8	.....	.....	1.35	.90	.80	.58	.42	.33	.36	.40	.42	.52
9	.52	.61	1.12	.88	.80	.....	.42	.35	.33	.41	.42	.51
10	.80	.58	1.30	.88	.....	.....	.42	.35	.35	.42	.62	.51
11	.59	.60	1.00	.87	.70	.....	.41	.35	.35	.42	.50	.51
12	.52	.58	.90	.85	.70	.....	.41	.35	.32	.42	.43	.51
13	.51	.95	.90	.86	.70	.....	.40	.35	.32	.42	.42	.51
14	.51	.83	.82	.82	.70	.....	.40	.36	.31	.43	.43	.51
15	.52	.68	.81	.81	.70	.....	.38	.36	.31	.43	.43	.51
16	.52	.70	.80	.81	.69	.....	.39	.35	.32	.42	.43	.51
17	.....	.68	.79	.81	.69	.....	.39	.36	.34	.42	.43	.51
18	.....	.60	.72	.81	.69	.....	.40	.35	.35	.41	.44	.51
19	.50	.....	.75	.80	.68	.....	.39	.35	.34	.42	.44	.55
20	.64	.60	.75	.80	.67	.....	.....	.35	.34	.42	.45	.57
21	.85	.61	.84	.80	.66	.....	.....	.35	.35	.43	.45	.53
22	.....	.....	.81	.81	.65	.....	.....	.35	.37	.43	.45	.50
23	.....	.....	.79	.80	.64	.....	.....	.36	.36	.43	.46	.50
24	.84	.60	.82	.79	.63	.....	.....	.36	.35	.43	.46	.49
25	.90	.....	.79	.79	.61	.....	.....	.35	.36	.43	.46	.47
26	.80	.....	.78	.80	.61	.....	.....	.36	.37	.43	.46	.45
27	.65	.60	.75	.80	.61	.....	.31	.37	.38	.43	.46	.45
28	1.00	.....	.75	.82	.61	.44	.31	.37	.38	.43	.46	.46
29	.80	.....	.77	.80	.61	.45	.30	.37	.43	.43	.46	.45
30	.....	.....	.78	.80	.61	.45	.31	.37	.39	.42	.46	.50
31	1.20	.....	.78	.....	.61	.....	.31	.36	.....	.42	.....	.53

TYLER CREEK NEAR HOT SPRINGS, CAL.

Location.—Below foot log at the Thompson ranch, in Sequoia National Forest, about 1½ miles north of Hot Springs and about 4 miles above junction with Deer Creek.

Records available.—January 16 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on left bank 100 feet below observer's house.

Channel.—Bowlders and sand.

Discharge measurements.—Made by wading.

Diversions.—Three small irrigation ditches divert above the station.

Cooperation.—Gage height record furnished by D. B. Thompson. Discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements can be made.

Discharge measurements of Tyler Creek near Hot Springs, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 16	H. J. Tompkins	1.00	4.0
Mar. 7	do	1.10	6.4
May 12	do	1.00	6.9

NOTE.—These measurements were made by wading.

Daily gage height, in feet, of Tyler Creek near Hot Springs, Cal., for 1911.

[D. B. Thompson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.3	1.1	1.2	1.15	1.0	0.8					
2		1.15		1.2	1.15					0.6	0.7	
3		1.1		1.2		1.0		0.5	0.4			0.5
4		1.2			1.15							
5		1.1	1.2			1.0	.7					
6		1.1	1.2	1.5		1.0		.5				
7		1.2	1.1		1.15	1.0					.7	.5
8		1.1	1.85			1.0	.5					
9		1.1	1.7	1.3		1.0			.4	.7		
10		1.0	1.75		1.1	1.0		.5				.6
11		1.1		1.3								
12		1.05	1.5		1.1						.7	
13		1.3	1.5			1.0				.6		
14		1.25		1.3	1.1							.6
15		1.2	1.3						.4			
16	1.0	1.2	1.3	1.2	1.1					.6	.6	
17		1.15	1.3		1.1		.5					
18	1.0	1.1		1.2	1.1			.5				.6
19	1.0	1.1	1.3	1.2	1.1	.9					.6	
20	1.0	1.1		1.2						.6		
21	1.25	1.1			1.1				.5			
22	1.1											
23		1.1			1.1		.5	.5			.5	.6
24	1.3	1.1		1.15		.9						
25	1.4	1.1	1.3	1.15	1.1					.7		
26	1.2	1.1	1.3	1.2				.4	.6			
27	1.2		1.2	1.2	1.1							
28	1.2	1.1	1.2									.7
29	1.55		1.2		1.05				.6	.7	.5	
30	1.2		1.2				.5	.4				
31	1.45		1.2									

TULE RIVER NEAR PORTERSVILLE, CAL.

Location.—Below highway bridge near the McFarland ranch, in the NW. ¼ NW. ¼ sec. 25, T. 21 S., R. 28 E., about 1 mile above mouth of South Fork and 6 miles east of Portersville. The North and Middle forks of Tule River unite about 9 miles above the station.

Records available.—May 1, 1901, to December 31, 1911.

Drainage area.—266 square miles.

Gage.—Staff in two sections on right bank, 100 feet below bridge; vertical upper section nailed to willow tree; inclined low-water section fastened to posts.

Channel.—Gravel and small bowlders, and is practically permanent.

Discharge measurements.—Made from bridge above gage or by wading.

Diversions.—Several small irrigation ditches divert water above the station.

Accuracy.—Results good.

Discharge measurements of Tule River near Portersville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 21	H. J. Tompkins	2.60	312
June 8	W. V. Hardy	2.39	229

Daily gage height, in feet, of Tule River near Portersville, Cal., for 1911.

[Martha Brough, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.20	5.0	1.85	2.90	2.60	2.40	1.65	1.00	0.83	0.91	1.00	1.15
2	1.20	3.10	1.88	2.95	2.55	2.30	1.60	1.00	.81	.93	1.00	1.15
3	1.20	2.80	2.00	2.90	2.60	2.25	1.55	1.00	.80	.95	1.00	1.15
4	1.20	3.50	2.60	2.95	2.70	2.30	1.50	1.00	.80	.96	1.00	1.15
5	1.20	2.62	2.40	3.60	2.75	2.30	1.45	.99	.81	.97	1.00	1.15
6	1.20	2.50	2.40	3.45	2.78	2.35	1.48	.98	.82	.99	1.00	1.20
7	1.08	2.40	2.50	3.10	2.70	2.40	1.40	.97	.84	1.00	1.00	1.30
8	1.18	2.35	4.90	3.00	2.65	2.40	1.38	.96	.86	1.00	1.00	1.30
9	1.21	2.30	4.00	2.95	2.63	2.40	1.36	.95	.88	1.00	1.00	1.30
10	2.75	2.20	5.10	2.90	2.60	2.35	1.35	.95	.87	1.00	1.80	1.29
11	1.80	2.15	3.90	2.80	2.60	2.30	1.34	.94	.86	1.00	1.60	1.28
12	1.60	2.20	3.40	2.73	2.60	2.28	1.33	.93	.85	.99	1.50	1.27
13	1.52	2.18	3.20	2.68	2.60	2.27	1.32	.93	.84	.98	1.40	1.26
14	1.45	2.90	3.00	2.60	2.60	2.26	1.31	.93	.83	.98	1.30	1.24
15	1.45	2.40	2.85	2.57	2.60	2.25	1.30	.93	.82	.98	1.20	1.22
16	1.45	2.20	2.80	2.60	2.58	2.24	1.30	.92	.80	.98	1.20	1.22
17	1.42	2.15	2.80	2.55	2.58	2.23	1.30	.92	.80	.98	1.20	1.22
18	1.40	2.10	2.81	2.60	2.57	2.20	1.30	.92	.80	.98	1.20	1.22
19	1.38	2.05	2.80	2.60	2.56	2.10	1.29	.91	.81	.98	1.20	1.22
20	1.38	2.00	2.80	2.65	2.55	2.05	1.28	.90	.82	.98	1.20	1.22
21	2.80	2.00	3.05	2.65	2.55	2.00	1.27	.90	.83	.98	1.20	1.22
22	2.10	2.00	2.81	2.65	2.56	1.95	1.25	.90	.84	.98	1.20	1.22
23	1.90	2.00	2.75	2.70	2.57	1.90	1.23	.90	.85	.98	1.20	1.22
24	3.02	1.99	2.80	2.75	2.58	1.88	1.21	.90	.86	.98	1.15	1.22
25	3.65	1.98	2.85	2.80	2.59	1.84	1.20	.90	.87	.98	1.15	1.22
26	2.75	1.96	2.75	2.85	2.60	1.80	1.18	.90	.88	.98	1.15	1.22
27	2.25	1.95	2.74	2.90	2.60	1.78	1.15	.89	.88	.98	1.15	1.25
28	2.10	1.90	2.76	2.75	2.50	1.75	1.12	.88	.89	.98	1.15	1.40
29	4.90	.....	2.80	2.60	2.40	1.70	1.10	.87	.90	.98	1.15	1.38
30	3.92	.....	2.88	2.60	2.40	1.68	1.08	.86	.91	.98	1.15	1.38
31	6.60	.....	2.90	.....	2.40	.....	1.04	.85	.....	.98	.....	1.38

NOTE.—Daily discharge determined from a well-defined rating curve.

Daily discharge, in second-feet, of Tule River near Portersville, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	43	1,520	128	376	286	236	96	26	16	21	26	38
2	43	445	133	393	273	214	88	26	15	22	26	38
3	43	344	154	376	286	204	82	26	14	23	26	38
4	43	610	286	393	314	214	75	26	14	24	26	38
5	43	292	236	657	329	214	70	25	15	24	26	38
6	43	260	236	588	338	225	73	25	15	25	26	43
7	32	236	260	445	314	236	64	24	16	26	26	53
8	41	225	1,440	410	300	236	62	24	18	26	26	53
9	44	214	865	393	294	236	60	23	19	26	26	53
10	329	193	1,590	376	286	225	58	23	18	26	119	52
11	119	183	810	344	286	214	57	22	18	26	88	51
12	88	193	565	323	286	210	56	22	17	25	75	50
13	78	189	483	308	286	208	55	22	16	25	64	49
14	70	376	410	286	286	206	54	22	16	25	53	47
15	70	236	360	278	286	204	53	22	15	25	43	45
16	70	193	344	286	281	201	53	21	14	25	43	45
17	66	183	344	273	281	199	53	21	14	25	43	45
18	64	173	347	286	278	193	53	21	14	25	43	45
19	62	164	344	286	276	173	52	21	15	25	43	45
20	62	154	344	300	273	164	51	20	15	25	43	45
21	344	154	428	300	273	154	50	20	16	25	43	45
22	173	154	347	300	276	145	48	20	16	25	43	45
23	136	154	329	314	278	136	46	20	17	25	43	45
24	417	152	344	329	281	133	44	20	18	25	38	45
25	682	150	360	344	283	126	43	20	18	25	38	45
26	329	147	329	360	286	119	41	20	19	25	38	45
27	204	145	326	376	286	116	38	19	19	25	38	48
28	173	136	332	329	260	111	36	19	19	25	38	64
29	1,440	.....	344	286	236	103	34	18	20	25	38	62
30	821	.....	370	286	236	106	32	18	21	25	38	62
31	2,780	.....	376	.....	236	.....	29	17	.....	25	.....	62

Monthly discharge of Tule River near Portersville, Cal., for 1911.

[Drainage area, 266 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	2,780	32	289	1.09	1.26	17,800	A.
February	1,520	136	271	1.02	1.06	15,100	A.
March	1,590	128	438	1.65	1.90	26,900	A.
April	657	273	353	1.33	1.48	21,000	A.
May	338	236	283	1.06	1.22	17,400	A.
June	236	100	182	.684	.76	10,800	A.
July	96	29	55.0	.207	.24	3,380	A.
August	26	17	21.7	.082	.09	1,330	B.
September	21	14	16.6	.062	.07	988	B.
October	26	21	24.8	.093	.11	1,520	B.
November	119	26	42.9	.161	.18	2,550	A.
December	64	38	47.7	.179	.21	2,930	A.
The year	2,780	14	168	.632	8.58	122,000	

SOUTH FORK OF TULE RIVER NEAR SUCCESS, CAL.

Location.—Opposite Indian school on Tule Indian Reservation, about 8 miles above junction with Tule River and 7 miles southeast of Success. Rocky Creek enters about 2 miles above the station.

Records available.—October 10, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to an alder tree on left bank opposite Indian school.

Channel.—Bowlders and gravel and appears permanent.

Discharge measurements.—Car and cable were installed in November, 1911. Previous measurements were made by wading below the gage. Low-water measurements are still made by wading.

Diversions.—Several small irrigation ditches, having a total capacity of about 11 second-feet, divert above the station.

Cooperation.—Gage-height record furnished by United States Indian Office.

Discharge measurements of South Fork of Tule River near Success, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 20[a]	H. J. Tompkins	0.60	13
May 9[a]	do	1.20	64
Nov. 28[b]	do	.55	77

[a] Measurement made by wading ½ mile below gage.
[b] Measurement made by wading 1 mile below gage.

Daily gage height, in feet, of South Fork of Tule River near Success, Cal., for 1911.

[A. P. Edmonson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.55	1.8	1.0	1.25	1.45	1.0	0.6	0.25	0.15	0.4	0.4	0.5
2	.55	1.6	1.0	1.35	1.4	.9	.6	.25	.15	.4	.4	.5
3	.55	1.4	1.1	1.45	1.3	.9	.55	.25	.15	.38	.4	.5
4	.55	1.6	1.5	1.2	1.2	.9	.55	.25	.15	.35	.4	.5
5	.55	1.35	1.3	2.1	1.25	.9	.5	.25	.15	.4	.45	.5
6	.6	1.3	1.2	•2.0	1.35	.95	.5	.25	.15	.4	.45	.55
7	.6	1.2	1.2	1.8	1.35	.9	.5	.25	.15	.4	.4	.6
8	.55	1.1	2.9	1.7	1.25	.9	.5	.25	.15	.4	.4	.6
9	.55	1.0	2.6	1.65	1.2	.9	.5	.2	.15	.5	.4	.6
10	1.5	1.0	3.1	1.6	1.2	.85	.5	.2	.15	.48	.45	.6
11	.95	1.1	2.5	1.5	1.0	.9	.5	.2	.15	.45	.55	.6
12	.9	1.05	2.1	1.5	1.1	1.0	.5	.2	.15	.45	.55	.6
13	.75	1.1	1.9	1.55	1.2	1.0	.5	.25	.15	.45	.55	.6
14	.7	1.7	1.8	1.5	1.25	1.0	.45	.2	.15	.45	.55	.6
15	.7	1.4	1.8	1.5	1.2	.95	.45	.2	.15	.45	.5	.6
16	.7	1.15	1.8	1.4	1.3	.9	.45	.2	.15	.45	.5	.6
17	.65	1.1	1.5	1.3	1.25	.8	.4	.2	.1	.45	.5	.65
18	.7	1.2	1.5	1.2	1.15	.8	.4	.2	.1	.45	.5	.62
19	.65	1.2	1.5	1.2	1.0	.8	.4	.2	.1	.45	.5	.6
20	.65	1.1	1.5	1.4	1.0	.8	.4	.2	.1	.45	.45	.65
21	1.3	1.0	1.6	1.2	1.15	.8	.4	.2	.1	.45	.45	.65
22	1.05	1.0	1.6	.....	1.2	.8	.4	.2	.1	.4	.45	.65
23	.85	1.0	1.5	.....	1.15	.8	.4	.2	.1	.4	.45	.65
24	2.5	1.0	1.5	.....	1.0	.8	.4	.2	.1	.4	.45	.6
25	1.8	1.0	1.5	.....	1.0	.8	.4	.2	.1	.4	.45	.55
26	1.1	.95	1.5	.....	1.0	.8	.4	.2	.1	.4	.5	.5
27	.9	1.0	1.6	1.5	1.0	.75	.3	.2	.12	.4	.5	.5
28	1.1	1.0	1.45	1.5	1.0	.75	.3	.2	.4	.4	.5	.55
29	2.2	.....	1.3	1.45	1.0	.75	.3	.15	.4	.4	.5	.62
30	1.6	.....	1.1	1.4	1.0	.75	.3	.15	.4	.4	.5	.6
31	3.0	.....	1.0	.....	1.0	.....	.25	.15	.....	.4	.....	•6

BEAR CREEK NEAR SPRINGVILLE, CAL.

Location.—At the Bear Creek ranger station, about 150 feet above mouth of Rancheria Creek, 2¾ miles above junction with North Fork of Tule River, and 6 miles northeast of Springville.

Records available.—January 23 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to a sycamore tree on right bank.

Channel.—Sand, gravel, and bowlders and fairly permanent.

Discharge measurements.—Made by wading.

Diversions.—A small irrigation ditch takes out about 300 feet above the station.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Bear Creek near Springville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 25	H. J. Tompkins	2.25	42
Mar. 14	....do	1.80	22

Daily gage height, in feet, of Bear Creek near Springville, Cal., for 1911.

[W. F. Derby, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.70		1.47	1.30							0.65
2								0.50				
3			1.30			0.99			0.46		0.62	
4		1.46		1.49			0.60			0.60		.68
5												
6					1.30						.62	.99
7										.58		
8			3.00									
9			3.36									
10			2.76							.58	2.10	
11											.91	
12			2.00									
13					1.26							
14		2.36	1.85			.91				.56		
15									.50			
16											.85	
17					1.16					.55		
18												.86
19												
20						.70						
21			1.46					.50	.50			
22											.69	
23	0.95			1.32			.61					
24	2.40					.62				.57		
25	2.15											
26	1.63			1.33						.59		
27	1.30										.65	
28	1.49									.60		
29	2.65											
30	2.22			1.30		.61			.60	.61	.65	
31	4.20		1.47		.98		.51	.45				

KAWEAH RIVER NEAR THREE RIVERS, CAL.

Location.—At the J. O. Carter ranch, in the SE. ¼ sec. 27, T. 17 S., R. 28 E., 1¼ miles southwest of Three Rivers. North Fork enters about 3 miles and South Fork three-fourths of a mile above the station.

Records available.—April 29, 1903, to December 31, 1911.

Drainage area.—520 square miles.

Gage.—Staff in two sections on left bank one-fourth mile back of observer's house. Vertical high-water section fastened to willow tree, inclined low-water section fastened to posts.

Channel.—Gravel and bowlders and fairly permanent.

Discharge measurements.—Made from car and cable at gage and by wading.

Diversions.—Several small ditches divert water for local irrigation and domestic use above the station. Power is also developed on the Middle and East forks.

Accuracy.—Results for 1911 are fairly good.

Discharge measurements of Kaweah River near Three Rivers, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 31	H. J. Tompkins	9.85	5,500
May 20	Wickert and Tompkins	7.75	2,160
June 9	W. V. Hardy	7.50	2,010
Sept. 12	J. E. Stewart [a]	4.58	83

[a] Made by wading 1¼ miles below gage.

Daily gage height, in feet, of Kaweah River near Three Rivers, Cal., for 1911.

[J. O. Carter, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.53	7.48	5.62	7.02	6.92	.....	6.90	5.55	4.60	4.74	4.50	4.57
2	4.58	6.88	5.62	6.92	6.92	6.85	6.85	5.44	4.60	4.68	4.50	4.57
3	4.56	6.60	5.74	6.92	7.08	7.12	6.90	5.40	4.60	4.74	4.50	4.58
4	4.58	6.85	6.55	6.85	7.30	7.55	6.85	5.36	4.59	4.64	4.50	4.60
5	4.52	6.38	6.15	7.35	7.38	.....	6.88	5.32	4.55	4.62	4.50	4.60
6	4.58	6.22	6.10	7.10	7.20	.....	6.80	5.36	.....	4.61	4.50	4.63
7	4.52	6.10	6.30	6.95	7.28	7.75	6.78	5.28	4.53	4.59	4.50	4.65
8	4.55	6.02	8.75	6.85	7.50	7.90	6.70	5.24	4.52	4.56	4.50	4.64
9	4.58	5.95	7.55	6.82	7.20	7.50	6.60	5.21	4.51	4.58	4.50	4.61
10	6.45	5.94	8.25	6.78	7.30	7.75	6.62	5.20	4.51	4.55	4.61	4.60
11	5.30	5.95	7.20	6.68	.....	8.15	6.48	5.16	4.51	.....	4.96	4.60
12	5.08	5.84	6.90	6.55	7.32	8.15	6.50	5.12	4.54	.....	4.66	4.60
13	5.01	6.18	6.62	6.60	7.30	8.20	6.45	5.08	4.55	.....	4.62	4.60
14	4.99	6.22	6.57	6.48	7.30	8.15	6.42	5.05	4.53	4.52	4.58	4.60
15	5.24	5.94	6.62	6.54	7.05	7.80	6.62	5.02	4.50	4.53	4.64	4.60
16	5.20	5.85	6.55	6.58	6.90	7.85	6.54	4.98	4.50	4.52	4.71	4.60
17	5.02	5.82	6.52	6.68	6.92	8.00	6.58	4.95	4.50	4.50	4.62	4.69
18	4.98	5.82	6.55	6.78	7.00	7.90	6.60	4.92	4.50	4.50	4.58	4.65
19	4.92	5.82	6.55	6.90	7.30	7.75	6.40	4.89	4.46	4.50	4.60	4.60
20	4.92	5.79	6.52	6.92	7.48	7.60	6.21	4.88	4.44	4.50	4.60	4.60
21	6.28	5.70	6.60	6.92	7.62	7.50	6.10	4.83	4.46	4.50	4.60	4.62
22	5.64	5.70	6.59	7.00	7.85	7.40	6.05	4.78	4.56	4.49	4.60	.....
23	5.41	5.70	6.48	7.10	8.30	7.28	5.98	4.78	4.68	4.49	4.55	4.65
24	6.55	5.74	6.55	7.15	.....	7.08	5.96	4.74	4.60	4.49	4.55	4.62
25	7.10	5.68	6.55	7.15	7.55	7.02	5.88	4.71	4.50	4.49	4.55	4.58
26	6.29	5.68	6.56	7.20	7.15	7.20	5.78	4.68	4.57	4.49	4.55	4.60
27	5.82	5.60	6.55	7.15	7.15	7.20	5.72	4.65	4.56	.....	4.55	4.65
28	5.70	5.61	6.62	6.95	7.30	7.15	5.68	4.64	4.54	.....	4.55	4.72
29	10.00	.....	6.74	6.79	7.25	7.10	5.56	4.64	4.49	4.50	4.55	4.70
30	9.05	.....	6.82	6.82	7.15	6.98	5.60	4.61	4.94	4.50	4.56	4.68
31	9.70	.....	6.92	.....	7.00	.....	5.58	4.60	.....	4.50	.....	4.68

Daily discharge, in second-feet, of Kaweah River near Three Rivers, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	68	1,920	391	1,390	1,290	1,300	1,270	362	86	113	70	81
2	77	1,250	391	1,290	1,290	1,220	1,220	318	86	101	70	81
3	73	1,000	445	1,290	1,450	1,500	1,270	303	86	113	70	83
4	77	1,220	960	1,220	1,700	2,020	1,220	289	84	96	70	86
5	66	831	678	1,760	1,800	2,110	1,250	275	78	90	70	86
6	77	723	645	1,480	1,580	2,210	1,180	289	76	88	70	92
7	66	645	775	1,320	1,680	2,300	1,160	261	75	84	70	96
8	72	597	4,000	1,220	1,950	2,530	1,080	248	73	80	70	94
9	77	555	2,020	1,190	1,580	1,950	1,000	238	72	83	70	88
10	1,010	549	3,120	1,160	1,700	2,300	1,020	235	72	78	88	86
11	271	555	1,580	1,070	1,710	2,940	905	223	72	77	166	86
12	196	494	1,270	960	1,720	2,940	920	210	76	76	97	86
13	176	697	1,020	1,000	1,700	3,030	882	198	78	74	90	86
14	170	723	976	905	1,700	2,940	800	190	75	73	83	86
15	249	549	1,020	952	1,420	2,370	1,020	182	70	75	94	86
16	235	499	960	984	1,270	2,450	952	171	70	73	107	86
17	179	483	936	1,070	1,290	2,690	984	163	70	70	90	103
18	168	483	960	1,160	1,370	2,530	1,000	155	70	70	83	96
19	151	483	960	1,270	1,700	2,300	845	148	64	70	86	86
20	151	468	936	1,290	1,920	2,080	716	145	62	70	86	86
21	853	426	1,000	1,290	2,110	1,950	645	133	64	70	86	90
22	419	426	992	1,370	2,450	1,820	615	122	80	69	86	93
23	314	426	905	1,480	3,200	1,680	573	122	101	69	78	96
24	1,100	445	960	1,530	2,610	1,450	561	113	86	69	78	90
25	1,720	417	960	1,530	2,020	1,390	515	107	70	69	78	83
26	862	417	968	1,580	1,530	1,580	464	101	81	69	78	86
27	520	382	960	1,530	1,530	1,580	435	96	80	69	78	96
28	449	386	1,020	1,320	1,700	1,530	417	94	76	70	78	109
29	6,610	.....	1,120	1,170	1,640	1,480	366	94	69	70	78	105
30	4,560	.....	1,190	1,190	1,530	1,350	382	88	160	70	80	101
31	5,920	.....	1,290	.....	1,370	.....	374	86	.....	70	.....	101

NOTE.—Daily discharge determined from two fairly well defined rating curves, applicable Jan. 1–28 and Jan. 29 to Dec. 31. Discharge interpolated for days on which gage was not read.

Monthly discharge of Kaweah River near Three Rivers, Cal., for 1911.

[Drainage area, 520 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	6,610	66	869	1.67	1.92	53,400	B.
February	1,920	382	645	1.24	1.29	35,800	B.
March	4,000	391	1,140	2.19	2.52	70,100	B.
April	1,760	905	1,270	2.44	2.72	75,600	B.
May	3,200	1,270	1,730	3.33	3.84	106,000	B.
June	3,030	1,220	2,050	3.94	4.40	122,000	B.
July	1,270	366	842	1.62	1.87	51,800	B.
August	362	86	186	.358	.41	11,400	B.
September	160	62	78.7	.151	.17	4,680	B.
October	113	69	78.0	.150	.17	4,800	B.
November	166	70	83.3	.160	.18	4,960	B.
December	109	81	90.6	.174	.20	5,570	B.
The year	6,610	62	754	1.45	19.69	546,000	

NORTH FORK OF KAWEAH RIVER AT KAWEAH, CAL.

Location.—At highway bridge in the SW. ¼ sec. 2, T. 17 S., R. 28 E., Sequoia National Forest, about half a mile north of Kaweah and 2 miles above junction with Kaweah River.

Records available.—October 12, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to right abutment of bridge.

Channel.—Solid rock and sand and fairly permanent.

Discharge measurements.—Made from bridge at gage and by wading.

Diversions.—Approximately 20 second-feet is diverted by several small ditches for irrigation above the station.

Accuracy.—Results are good at low stages; publication of discharge is withheld until confirmatory measurements can be secured for high stages.

Cooperation.—Previous to October 1, 1911, gage-height record was furnished by United States Forest Service. Discharge measurements also furnished by the Forest Service in 1911.

Discharge measurements of North Fork of Kaweah River at Kaweah, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 27	H. J. Tompkins	1.82	151
29	do	5.00	2,000
29	do	5.20	[b] 2,060
29	do	5.55	[b] 2,540
30	do	4.20	1,510
Feb. 1	do	3.00	729
Mar. 10	Tompkins and Purdy	3.65	1,120
11	H. J. Tomkpins	2.95	675
12	do	2.68	499
May 19	do	2.45	344
Sept. 17[a]	do	.60	7.0

[a] By wading 2 miles below gage. [b] Measurement very unreliable.

NOTE.—All measurements above 600 second-feet liable to considerable error.

Daily gage height, in feet, of North Fork of Kaweah River at Kaweah, Cal., for 1911.

[G. W. Purdy and L. Weckert, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	3.0	.....	2.7	2.4	2.2	1.5	0.9	0.6	0.7	0.7	0.8
2	0.74	.....	.....	2.6	2.45	2.1	1.55	.9	.6	.....	.7	.8
3	.75	.....	1.75	2.7	2.45	2.1	1.45	.85	.6	.....	.7	.8
4	.78	.....	.....	.....	2.55	2.1	1.5	.85	.6	.....	.7	.8
5	.....	.....	2.8	2.9	2.7	2.3	1.4	.85	.6	.....	.7	.8
6	.79	.....	.....	2.85	2.55	2.2	.....	.85	.6	.....	.7	.8
7	.78	.....	2.35	2.7	2.55	2.2	.....	.85	.6	.....	.7	.8
8	.....	.....	4.1	2.6	.....	2.2	.....	.85	.6	.....	.7	.85
9	.83	.....	3.1	2.55	2.55	.....	1.3	.85	.6	.....	.7	.9
10	1.92	.....	3.65	2.5	2.5	.....	1.3	.85	.6	.....	.95	.85
11	1.30	.....	3.0	2.4	2.5	.....	1.25	.85	.6	.....	1.12	.85
12	1.22	.....	2.7	2.4	2.5	2.1	1.25	.8	.6	.....	.9	.8
13	1.15	.....	2.5	2.35	2.5	2.1	1.2	.8	.6	.....	.85	.85
14	1.12	2.00	2.45	2.35	2.4	.....	1.2	.8	.6	.....	.85	.85
15	1.55	.....	.....	2.3	2.3	.....	1.15	.75	.6	.7	.85	.9
16	1.35	.....	.....	2.35	.....	.....	1.1	.75	.6	.7	.85	.9
17	.....	.....	2.5	2.45	.....	2.0	1.1	.75	.6	.7	.85	.9
18	.....	1.80	2.45	2.5	.....	1.95	1.1	.7	.6	.7	.8	.9
19	.....	1.80	2.35	2.55	2.45	.....	1.2	.7	.6	.7	.8	.9
20	.....	1.80	2.4	2.5	2.4	1.9	1.15	.7	.6	.7	.8	.9

Daily gage height, in feet, of North Fork of Kaweah River at Kaweah, Cal., for 1911— Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
21	.....	.....	2.45	2.5	2.5	.....	1.1	0.7	0.6	0.65	0.8	0.9
22	.....	.....	2.35	.....	2.5	.....	1.1	.7	.6	.65	.8	.9
23	.....	.....	2.4	2.55	2.5	.....	1.1	.7	.7	.65	.75	.9
24	2.59	1.72	2.4	2.75	2.5	.....	1.1	.7	.7	.65	.75	.85
25	2.85	.....	2.45	2.7	.....	.....	1.05	.7	.7	.65	.8	.85
26	2.28	.....	2.35	2.7	.....	1.7	1.05	.7	.7	.65	.8	.85
27	1.78	1.60	2.45	2.7	2.2	1.68	1.0	.7	.7	.65	.8	.85
28	1.72	.....	2.5	2.5	2.2	1.58	1.0	.65	.7	.65	.8	.95
29	4.85	.....	2.48	2.4	2.2	1.6	1.0	.65	.7	.65	.8	.95
30	4.29	.....	2.6	2.4	2.0	1.55	.95	.65	.7	.7	.8	.9
31	4.88	.....	2.6	.....	.....	.....	.9	.65	.....	.7	.....	.9

SOUTH FORK OF KAWEAH RIVER NEAR THREE RIVERS, CAL.

Location.—On the Mehrton ranch, in the SE. ¼ sec. 8, T. 18 S., R. 29 E., 500 feet above mouth of Cinnamon Creek, and 4½ miles southeast of Three Rivers, about 5 miles above junction with Keweah River.

Records available.—September 18 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to large bowlder on right bank.

Channel.—Gravel and bowlders; rough.

Dsicharge measurements.—Car and cable were installed in November, 1911. Low-water measurements are made by wading.

Diversions.—Two small ditches divert water for irrigation above the station.

Discharge measurements of South Fork of Kaweah River near Three Rivers, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Dis-charge.
		Feet.	*Sec.-ft.*
Sept. 19[a]	H. J. Tompkins	2.00	4.6
Nov. 23[b]	.....do	2.10	12

[a] Made by wading at gage. [b] Made by wading 300 feet above gage.

Daily gage height, in feet, of South Fork of Kaweah River near Three Rivers, Cal., for 1911.

[David N. Mehrten, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	2.1	2.0	2.1	16	.....	2.0	2.15	2.2
2	.....	2.1	2.0	2.1	17	.....	2.0	2.1	2.3
3	.....	2.1	2.0	2.1	18	.....	2.0	2.1	2.1
4	.....	2.1	2.1	2.15	19	1.95	2.0	2.1	2.15
5	.....	2.1	2.1	2.2	20	2.0	2.0	2.1	2.15
6	.....	2.1	2.1	2.15	21	2.1	2.0	2.1	2.15
7	.....	2.05	2.05	2.15	22	2.0	2.0	2.1	2.15
8	.....	2.05	2.1	2.1	23	2.0	2.0	2.1	2.25
9	.....	2.15	2.2	2.1	24	2.0	2.0	2.1	2.2
10	.....	2.1	2.4	2.1	25	2.0	2.0	2.1	2.1
11	.....	2.1	2.2	2.1	26	2.0	2.0	2.1	2.1
12	.....	2.05	2.15	2.1	27	2.0	2.05	2.1	2.1
13	.....	2.05	2.1	2.2	28	2.0	2.05	2.1	2.25
14	.....	2.0	2.1	2.2	29	2.1	2.05	2.1	2.15
15	.....	2.0	2.1	2.2	30	2.2	2.1	2.1	2.1
					31	.....	2.1	.....	2.1

KINGS RIVER NEAR SANGER, CAL.

Location.—About half a mile below new highway bridge at Piecha, near mouth of canyon, in the NW. ¼ sec. 8, T. 13 S., R. 24 E., southwest of Red Mountain, and about 12 miles northeast of Sanger.

Records available.—September 3, 1895, to December 31, 1911.

Drainage area.—1,740 square miles.

Gage.—Friez improved automatic water-stage register on right bank. Auxiliary staff gage in two sections located just above automatic register.

Channel.—Gravel and small bowlders; shifts but slightly.

Discharge measurements.—Made from car and cable 500 feet below gage or by wading.

Diversions.—Several miles above the station there is a small diversion for a flume used to float lumber to Sanger.

Accuracy.—Results are good.

Discharge measurements of Kings River near Sanger, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 20	J. E. Stewart	6.09	1,630
May 16	....do	9.28	6,250
June 10	W. V. Hardy	11.50	12,200
13	H. J. Tompkins	12.30	14,700
16	W. V. Hardy	12.25	15,400
Sept. 13	J. E. Stewart	4.80	562

Daily gage height, in feet, of Kings River near Sanger, Cal., for 1911.

[O. G. Williams, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.3	10.4	5.8	8.65	8.95	9.45	10.65	7.3	5.15	5.1	4.45	4.4
2	4.25	9.35	5.9	8.75	9.0	9.7	10.8	7.2	5.1	5.0	4.45	4.4
3	4.25	8.65	6.2	8.9	9.4	10.45	10.95	7.05	5.1	4.9	4.45	4.4
4	4.3	8.6	8.35	8.65	9.9	11.15	10.95	6.85	5.1	4.85	4.45	4.45
5	4.3	7.85	7.75	9.15	10.45	11.45	10.95	6.8	5.05	4.8	4.4	4.45
6	4.3	7.35	7.25	9.5	9.75	11.75	10.85	6.75	5.0	4.75	4.4	4.45
7	4.3	7.05	8.6	8.95	9.8	11.35	10.95	6.6	4.95	4.75	4.4	4.55
8	4.3	6.75	11.65	8.6	10.0	11.25	10.85	6.5	4.9	4.7	4.4	4.55
9	4.3	6.5	9.9	8.5	10.05	11.35	10.5	6.4	4.85	4.65	4.4	4.5
10	6.15	6.35	10.7	8.4	9.8	11.7	10.5	6.35	4.85	4.7	4.5	4.45
11	5.2	6.3	9.4	8.1	9.85	12.15	10.1	6.25	4.85	4.7	4.85	4.45
12	4.85	6.35	8.7	7.95	10.15	12.4	10.2	6.15	4.8	4.65	4.5	4.4
13	5.2	6.4	8.3	7.8	10.25	12.5	10.2	6.1	4.75	4.6	4.55	4.35
14	5.1	7.05	7.95	7.65	10.1	12.05	10.25	5.95	4.75	4.6	4.6	4.35
15	5.6	6.55	8.85	7.6	9.6	12.1	10.35	5.9	4.7	4.55	4.55	4.35
16	5.35	6.3	7.7	7.8	9.3	12.35	10.1	5.8	4.65	4.55	4.6	4.35
17	4.95	6.1	7.65	7.95	9.35	12.5	11.1	5.75	4.65	4.55	4.6	4.4
18	4.9	6.0	7.65	8.15	9.7	12.65	10.6	5.7	4.65	4.5	4.55	4.4
19	4.85	6.0	7.7	8.55	10.4	12.35	10.5	5.7	4.65	4.5	4.55	4.35
20	4.85	6.1	7.65	8.7	10.8	12.05	9.85	5.65	4.6	4.5	4.55	4.35
21	6.55	6.0	7.7	8.65	11.0	12.1	9.4	5.6	4.6	4.5	4.55	4.4
22	5.9	5.95	7.6	8.8	11.4	11.75	9.1	5.6	4.9	4.45	4.5	4.3
23	5.5	5.95	7.55	9.15	11.85	11.5	8.9	5.5	5.6	4.45	4.5	4.35
24	7.75	5.95	7.6	9.45	11.6	10.95	8.7	5.5	5.2	4.45	4.45	4.4
25	9.35	5.85	7.65	9.65	10.8	10.75	8.5	5.4	5.05	4.45	4.45	4.3
26	7.5	5.75	7.7	9.8	10.15	11.2	8.25	5.4	4.95	4.45	4.45	4.25
27	6.35	5.85	7.75	9.5	10.05	11.55	8.0	5.3	4.85	4.45	4.45	4.25
28	6.0	5.8	7.85	9.15	10.3	11.55	7.85	5.3	4.75	4.45	4.45	4.5
29	10.25	.....	7.95	8.85	10.15	11.25	7.65	5.25	4.75	4.45	4.4	4.5
30	12.7	.....	8.1	8.8	9.9	10.95	7.55	5.2	5.1	4.45	4.4	4.4
31	13.7	.....	8.35	.....	9.65	.....	7.35	5.15	.....	4.45	.....	4.35

Daily discharge, in second-feet, of Kings River near Sanger, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	296	9,030	1,360	5,140	5,700	6,730	9,720	3,030	814	778	375	348
2	270	6,520	1,450	5,320	5,800	7,290	10,200	2,900	778	708	375	348
3	270	5,140	1,750	5,610	6,620	9,160	10,600	2,710	778	642	375	348
4	296	5,050	4,600	5,140	7,760	11,200	10,600	2,470	778	610	375	375
5	296	3,800	3,660	6,100	9,160	12,200	10,600	2,410	743	578	348	375
6	296	3,100	2,960	6,840	7,400	13,200	10,300	2,360	708	548	348	375
7	296	2,710	5,050	5,700	7,520	11,900	10,600	2,190	675	548	348	430
8	296	2,360	12,800	5,050	8,000	11,500	10,300	2,080	642	517	348	430
9	296	2,080	7,760	4,870	8,120	11,900	9,300	1,970	610	488	348	402
10	1,700	1,920	9,860	4,690	7,520	13,000	9,300	1,920	610	517	402	375
11	851	1,860	6,620	4,190	7,640	14,600	8,250	1,800	610	517	610	375
12	610	1,920	5,230	3,960	8,380	15,500	8,500	1,700	578	488	402	348
13	851	1,970	4,520	3,730	8,630	15,800	8,500	1,650	548	458	430	322
14	778	2,710	3,960	3,510	8,250	14,200	8,630	1,500	548	458	458	322
15	1,180	2,140	5,520	3,440	7,060	14,400	8,900	1,450	517	430	430	322
16	966	1,860	3,580	3,730	6,410	15,300	8,250	1,360	488	430	458	322
17	675	1,650	3,510	3,960	6,520	15,800	11,100	1,310	488	430	458	348
18	642	1,550	3,510	4,270	7,290	16,400	9,580	1,270	488	402	430	348
19	610	1,550	3,580	4,960	9,030	15,300	9,300	1,270	488	402	430	322
20	610	1,650	3,510	5,230	10,200	14,200	7,640	1,220	458	402	430	322
21	2,140	1,550	3,580	5,140	10.800	14,400	6,620	1,180	458	402	430	348
22	1,450	1,500	3,440	5,420	12,000	13,200	6,000	1,180	642	375	402	296
23	1,090	1,500	3,370	6,100	13,500	12,400	5,610	1,090	1,180	375	402	322
24	3,660	1,500	3,440	6,730	12,700	10,600	5,230	1,090	851	375	375	348
25	6,520	1,410	3,510	7,180	10,200	10,000	4,870	1,010	743	375	375	296
26	3,300	1,310	3,580	7,520	8,380	11,400	4,440	1,010	675	375	375	270
27	1,920	1,410	3,660	6,840	8,120	12,500	4,030	926	610	375	375	270
28	1,550	1,360	3,800	6,100	8,760	12,500	3,800	926	548	375	375	402
29	8,630	.....	3,960	5,520	8,380	11,500	3,510	888	548	375	348	402
30	16,600	.....	4,190	5,420	7,760	10,600	3,370	851	778	375	348	348
31	20,500	.....	4,600	.....	7,180	.....	3,100	814	.....	375	.....	322

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Kings River near Sanger, Cal., for 1911.

[Drainage area, 1,740 square miles.]

Month.	Discharge in second feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	20,500	270	2,560	1.47	1.70	157,000	A.
February	9,030	1,310	2,580	1.48	1.54	143,000	A.
March	12,800	1,360	4,380	2.52	2.90	269,000	A.
April	7,520	3,440	5,250	3.02	3.37	312,000	A.
May	13,500	5,700	8,410	4.83	5.57	517,000	A.
June	16,400	6,730	12,600	7.24	8.08	750,000	A.
July	11,100	3,100	7,770	4.47	5.15	478,000	A.
August	3,030	814	1,600	.920	1.06	98,400	A.
September	1,180	458	646	.371	.41	38,400	A.
October	778	375	468	.269	.31	28,800	A.
November	610	348	399	.229	.26	23,700	B.
December	430	270	348	.200	.23	21,400	B.
The year	20,500	270	3,920	2.25	30.58	2,840,000	

DINKEY CREEK NEAR OCKENDEN, CAL.

Location.—Above trail bridge at Dinkey Creek ranger station, in the NE. ¼ sec. 20, T. 10 S., R. 26 E., in the Sierra National Forest, about 11 miles above junction with North Fork of Kings River and about 9½ miles southeast of Ockenden. Rock Creek enters 3 miles above and Bear Creek 1½ mile sbelow the station.

Records available.—September 17, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on right bank about 400 feet below forest ranger's station.

Channel.—Gravel and small bowlders and appears permanent.

Discharge measurements.—Made from car and cable installed in October, 1911. Low-water measurements made by wading.

Cooperation.—Gage height record and discharge measurements furnished by United States Forest Service. This station is only maintained during the summer months.

Estimates are withheld until additional measurements can be made.

Discharge measurements of Dinkey Creek near Ockenden, Cal., for 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
June 11	H. J. Tompkins	2.90	736
Sept. 22	.....do	.80	31

Daily gage height, in feet, of Dinkey Creek near Ockenden, Cal., for 1911.

[Roy Boothe and Frank Price, observers.]

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1			2.35	0.9	0.5	16		3.25	1.75	0.7	0.4
2			2.4	.8	.5	17		3.3	1.9	.6	.....
3			2.5	.8	.5	18		2.1	1.8	.6	.....
4			2.4	.8	.5	19		3.05	1.55	.6	.4
5			2.3	.8	.5	20		3.15	1.5	.6	.....
6			2.35	.75	.5	21		2.9	1.35	.6	.4
7			2.25	.7	.5	22		2.8	1.25	.6	1.0
8		3.2	2.1	.7	.5	23		2.55	1.2	.5	.....
9		3.0	2.05	.7	.4	24		2.35	1.15	.5	.5
10		3.15	1.95	.7	.4	25		2.35	1.15	.5	.....
11		3.2	1.95	.7	.4	26		2.65	1.05	.5	.5
12		3.25	1.85	.7	.....	27		2.65	1.0	.5	.....
13		3.3	1.85	.7	.4	28	2.8	2.5	.95	.5	.5
14		3.2	1.85	.7	.....	29	2.5	2.5	.9	.5	.5
15		3.15	1.75	.7	.....	30		2.4	.85	.5	.5
						31			.85	.5	.....

BIG CREEK NEAR TOLLHOUSE, CAL.

Location.—At Hawk's mine, in the SW. ¼ sec. 27, T. 10 S., R. 25 E., in Sierra National Forest, 3½ miles above junction with Kings River, and about 9 miles east of Tollhouse.

Records available.—March 21 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in two sections on left bank near observer's cabin.

Channel.—Bowlders and solid rock; appears permanent.

Discharge measurements.—Made by wading.

Diversions.—Two small ditches above the station. One is used to operate a small stamp mill and the water is returned below the gage. The other ditch is used for irrigation.

Cooperation.—Gage-height record furnished by Ira F. Hawk. Discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

Discharge measurements of Big Creek near Tollhouse, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 21	H. J. Tompkins	2.60	122
June 10	do	.20	28
Sept. 23	do	−1.30	2.4

Daily gage height, in feet, of Big Creek near Tollhouse, Cal., for 1911.

[Ira F. Hawk, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.6	1.8	.8	−0.5	−1.1	−1.3	−1.3	−1.3	−1.2
2	.....	2.5	1.8	.7	− .5	−1.1	−1.3	−1.3	−1.3	−1.2
3	.....	2.5	1.8	.7	− .6	−1.1	−1.3	−1.3	−1.3	−1.2
4	.....	2.3	1.9	.5	− .6	−1.1	−1.3	−1.3	−1.3	−1.2
5	.....	3.5	2.0	.6	− .6	−1.2	−1.3	−1.3	−1.3	−1.2
6	.....	4.5	1.7	.5	− .7	−1.2	−1.3	−1.3	−1.3	−1.1
7	.....	2.8	1.8	.5	− .7	−1.2	−1.3	−1.3	−1.3	−1.2
8	.....	2.7	1.7	.4	− .7	−1.2	−1.3	−1.3	−1.3	−1.2
9	.....	2.6	1.7	.3	− .7	1.2	−1.3	−1.3	−1.2	−1.2
10	.....	2.6	1.6	.3	− .7	−1.2	−1.3	−1.3	−1.0	−1.2
11	.....	2.4	1.5	.2	− .7	−1.2	−1.3	−1.3	−1.1	−1.2
12	.....	2.3	1.5	.1	− .7	−1.2	−1.3	−1.3	−1.1	−1.2
13	.....	2.2	.....	.0	− .8	−1.2	−1.3	−1.3	−1.1	−1.2
14	.....	2.0	.....	.0	− .8	−1.2	−1.3	−1.3	−1.2	−1.2
15	.....	2.1	.....	.0	− .8	−1.2	−1.3	−1.3	−1.2	−1.2
16	.....	2.1	.....	.0	− .9	−1.2	−1.3	−1.3	−1.1	−1.2
17	.....	2.2	1.3	.0	− .9	−1.2	−1.3	−1.3	−1.2	−1.2
18	.....	2.3	1.2	−.1	− .9	−1.2	−1.3	−1.3	−1.2	−1.2
19	.....	2.4	1.3	−.2	− .9	−1.2	−1.3	−1.3	−1.2	−1.2
20	.....	2.4	1.3	−.2	− .9	−1.2	−1.3	−1.3	−1.2	−1.2
21	2.6	2.2	1.2	−.3	−1.0	−1.2	−1.3	−1.3	−1.2	−1.2
22	2.6	2.2	1.3	−.3	−1.0	−1.2	−1.3	−1.3	−1.2	−1.2
23	2.5	2.2	1.3	−.3	−1.0	−1.3	−1.3	−1.3	−1.2	−1.2
24	2.4	2.2	1.2	−.3	−1.0	−1.3	−1.3	−1.3	−1.2	−1.2
25	2.4	2.3	1.0	−.3	−1.0	−1.3	−1.3	−1.3	−1.2	−1.2
26	2.4	2.4	1.0	−.3	−1.1	−1.3	−1.3	−1.3	−1.2	−1.2
27	2.3	2.4	.9	−.3	−1.1	−1.3	−1.3	−1.3	−1.2	−1.2
28	2.3	2.0	.8	−.4	−1.1	−1.3	−1.3	−1.3	−1.2	.....
29	2.4	1.8	.8	−.4	−1.1	−1.3	−1.3	−1.3	−1.2	− .8
30	2.4	1.6	.9	−.5	−1.1	−1.3	−1.3	−1.3	−1.2	− .8
31	2.4	.....	.9	.....	−1.1	−1.3	.....	−1.3	.....	− .8

NOTE.—Gage heights affected by ice during the latter part of December.

RUSH CREEK NEAR OCKENDEN, CAL.

Location.—Above highway bridge at Peterson's mill, in the SW. ¼ sec. 19, T. 10 S., R. 25 E., in the Sierra National Forest, 6 miles above junction with Big Creek, and about 3 miles southeast of Ockenden. Taylor Creek enters 1 mile above the gage.

Records available.—September 22, 1910 to January 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to a cedar tree on right bank 200 feet above highway bridge. Gage washed out February 1, 1911 and replaced at a different datum June 10, 1911.

Channel.—Sand and will shift at high water.

Discharge measurements.—Made from highway bridge 200 feet below gage or by wading.

Cooperation.—Gage height record furnished by C. G. Peterson. Discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements have been made.

Discharge measurements of Rush Creek near Ockenden, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 10	H. J. Tompkins	1.05	8.6
Mar. 20	.....do	(a)	65
June 10	.....do	b2.25	10
Sept. 23c	.....do	b1.85	1.3

a Gage gone.
b Referenced to new datum.
c Measurement made from plank 40 feet below gage.

Daily gage height, in feet, of Rush Creek near Ockenden, Cal., for 1911.

[C. G. Peterson, observer.]

Day.	Jan.	Day.	Jan.	Day.	Jan.	Day.	Jan.	Day.	Jan.	Day.	Jan.
1	0.52	6	0.48	11	0.95	16	1.15	21	1.35	26	1.65
2	.52	7	.47	12	.92	17	.95	22	1.20	27	1.25
3	.50	8	.47	13	.95	18	.95	23	.95	28	1.7
4	.50	9	1.44	14	.95	19	.85	24	3.10	29	3.75
5	.48	10	1.20	15	1.75	20	1.85	25	3.65	30	3.88
										31	4.75

FRESNO RIVER NEAR KNOWLES, CAL.

Location.—At Fresno Crossing, in the N. ½ sec. 15, T. 8 S., R. 20 E., about 6 miles northeast of Knowles.

Records available.—September 16 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to willow tree on left bank, about 100 feet above highway bridge.

Channel.—Small bowlders, gravel, and sand, and fairly permanent.

Discharge measurements.—Made from car and cable about 400 feet below gage and by wading.

Diversions.—Water is diverted above the station for irrigation and for use in lumbering.

Discharge measurements of Fresno River near Knowles, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec. ft.*
Sept. 16[a]	J. E. Stewart	0.50	15
Nov. 10[b]	H. J. Tompkins	.62	25

[a] Made by wading 150 feet above the gage. [b] Made by wading 200 feet above the gage.

Daily gage height, in feet, of Fresno River near Knowles, Cal., for 1911.

[J. E. Gayman, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	0.60	0.50	0.58	16	0.50	0.55	0.60	0.58
2	.....	.60	.50	.58	17	.50	.55	.68	.62
3	.....	.57	.50	.60	18	.51	.50	.65	.60
4	.....	.60	.50	.58	19	.50	.50	.63	.60
5	.....	.57	.50	.58	20	.45	.50	.62	.65
6	.....	.58	.50	.57	21	.45	.50	.65	.70
7	.....	.55	.55	.65	22	.47	.48	.65	.60
8	.....	.52	.55	.65	23	.50	.50	.63	.60
9	.....	.50	.55	.62	24	.50	.50	.65	.60
10	.....	.55	.60	.60	25	.50	.50	.60	.60
11	.....	.60	.90	.60	26	.57	.50	.60	.50
12	.....	.58	.70	.58	27	.55	.52	.60	.80
13	.....	.55	.70	.55	28	.60	.52	.60	.82
14	.....	.55	.68	.55	29	.52	.50	.60	.70
15	.....	.52	.60	.57	30	.55	.50	.58	.65
					31	.....	.50	.....	.75

NELDER CREEK [1] NEAR FRESNO FLATS, CAL.

Location.—Above highway bridge on Salt Springs and Crane Valley road, in the SE. ¼ sec. 36, T. 6 S., R. 21 E., in the Sierra National Forest, just above intake of flume feeder for Madera Sugar Pine Co.'s flume, and about 4 miles northeast of Fresno Flats.

Records available.—September 23, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to an alder tree on left bank 400 feet above bridge.

Channel.—Gravel and sand, and will shift at high water.

Discharge measurements.—Made by wading. No measurements were made during 1911.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

[1] Formerly published as Fresno River near Fresno Flats. See map of Mariposa quadrangle, published July, 1912.

Daily gage height, in feet, of Nelder Creek near Fresno Flats, Cal., for 1911.

[W. M. Brown, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1				2.0			16	1.0					
2					1.5		17			1.8			
3	0.6						18						
4							19	0.8					
5							20		1.4	1.8		1.3	
6		1.6			1.6		21						1.5
7			4.1				22		1.4		1.7		
8				2.0			23	1.0					1.6
9							24		1.4				
10	1.2					1.7	25	3.0					
11			2.1				26	1.8			1.7		
12					1.4		27		1.6	1.8		1.1	
13			1.8		1.4		28				1.6		
14	1.1						29				1.5		
15		1.5		1.7			30	5.7					
							31	4.5		1.9			

NORTH FORK OF FRESNO RIVER [1] NEAR SUGAR PINE, CAL.

Location.—At Miami Creek ranger station, in Sierra National Forest, 3 miles southwest of Sugar Pine.

Records available.—September 26, 1910, to September 30, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to an alder tree on left bank, 200 feet north of forest ranger's station.

Channel.—Sand and bowlders.

Discharge measurements.—Made by wading. No measurements were made during 1911.

Cooperation.—Gage-height record and discharge measurements furnished by the United States Forest Service.

Estimates are withheld until additional measurements are available.

Daily gage height, in feet, of North Fork of Fresno River near Sugar Pine, Cal., for 1911.

[M. McLeod, observer.]

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1			0.7	0.7	16				0.6
2			.7	.7	17			0.7	
3			.7	.7	18			.7	.6
4			.7	.7	19				
5			.7	.7	20				.6
6			.7	.7	21				.6
7			.7	.7	22				.65
8			.7	.65	23			.7	.65
9			.7	.7	24		0.8	.65	.6
10			.7	.65	25		.7	.65	.6
11			.7	.6	26	0.8		.65	.6
12				.6	27		.7	.7	.6
13				.6	28	.8	.7	.7	.6
14				.6	29	.7	.7	.7	.65
15					30	.8	.7		.65
					31		.7		

[1] Known locally as Miami Creek.

MERCED RIVER NEAR MERCED FALLS, CAL.

Location.—Near the mouth of the canyon, in the NW. ¼ sec. 11, T. 5 S., R. 15 E., 2 miles above the dam at Merced Falls.

Records available.—April 6, 1901, to December 31, 1911.

Drainage area.—1,090 square miles.

Gage.—Inclined staff in four sections on right bank and a vertical low-water section.

Channel.—Gravel, and will shift at high stages.

Discharge measurements.—Made from car and cable at gage or by wading.

Artificial control.—Flow somewhat affected by regulation for power development several miles above the station.

Accuracy.—Results for 1911 are fairly good, although there was a considerable change in channel during high water.

Discharge measurements of Merced River near Merced Falls, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 18	J. E. Stewart	10.51	1,750
May 13	do	12.54	5,120
June 13	W. V. Hardy	15.00	11,100
July 27	J. E. Stewart	10.51	1,370
Sept. 18	do	8.27	124

Daily gage height, in feet, of Merced River near Merced Falls, Cal., for 1911.

[C. Kelsey, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.45	15.05	10.8	12.2	12.05	12.4	12.55	10.15	8.85	8.55	8.35	8.42
2	8.5	13.0	12.35	12.25	12.05	12.65	12.6	10.1	8.85	8.55	8.40	8.40
3	8.45	11.8	12.35	12.4	12.25	13.3	12.8	10.0	8.80	8.65	8.30	8.40
4	8.4	11.7	14.45	12.15	12.65	13.6	12.7	9.9	8.80	8.70	8.32	8.42
5	8.4	11.25	14.45	12.8	13.2	13.8	12.7	9.9	8.75	8.55	8.35	8.40
6	8.45	10.85	13.65	12.75	12.6	14.0	12.8	9.85	8.70	8.55	8.30	8.45
7	8.45	10.5	16.5	12.2	12.25	13.8	12.75	9.7	8.70	8.55	8.35	8.60
8	8.45	10.75	16.1	12.0	12.3	13.65	12.5	9.7	8.60	8.65	8.30	8.62
9	8.6	10.55	16.05	12.0	12.5	13.55	12.15	9.7	8.60	8.55	8.32	8.51
10	10.15	10.4	16.05	12.0	12.4	13.8	12.1	9.65	8.55	8.55	8.45	8.40
11	9.25	11.0	13.8	11.8	12.55	14.25	12.25	9.6	8.50	8.51	8.80	8.45
12	9.6	10.75	12.75	11.65	12.7	14.6	12.1	9.6	8.55	8.60	8.80	8.48
13	13 2	11.3	12.1	11.55	12.55	14.65	12.1	9.5	8.60	8.45	8.50	8.40
14	11.15	11.8	11.8	11.45	12.55	14.6	12.05	9.45	8.50	8.45	8.52	8.40
15	11.4	10.95	11.65	11.4	12.25	14.35	12.1	9.35	8.45	8.65	8.48	8.38
16	10.1	10.6	11.55	11.5	11.95	14.4	13.2	9.3	8.40	8.46	8.50	8.41
17	9.45	10.4	11.55	11.6	11.9	14.5	12.4	9.25	8.35	8.42	8.70	8.42
18	9.2	10.25	11.5	11.75	11.85	14.45	12.45	9.2	8.40	8.40	8.70	8.51
19	9.1	10.3	11.6	11.95	12.3	14.4	12.0	9.2	8.38	8.32	8.50	8.46
20	9.35	10.35	11.5	12.0	12.85	14.3	11.7	9.2	8.38	8.15	8.55	8.38
21	1.13	10.15	11.55	12.0	13.25	14.25	11.4	9.2	8.36	8.30	8.62	8.32
22	10.35	10.1	11.5	12.05	13.55	13.65	11.2	9.15	8.40	8.30	8.55	8.25
23	9.55	10.0	11.5	12.35	13.95	13.3	11.1	9.1	8.45	8.25	8.50	8.27
25	13.1	10.05	11.5	12.55	13.8	12.8	11.05	9 0	8.65	8.35	8.48	8.35
25	15.75	9.9	11.5	12.75	13.3	12.5	10.95	9.0	8.82	8.30	8.45	8.35
26	11.85	9.85	11.55	12.8	12.8	13.0	10.7	9.0	8.70	8.30	8.48	8.40
27	10.85	9.85	11.6	12.45	12.9	13.4	10.55	9.0	8.65	8.30	8.45	8.29
28	10.25	9.8	11.65	12.15	13.05	13.4	10.6	8.9	8.60	8.32	8.40	8.33
29	12.9	.....	11.75	11.95	13.15	13.05	10.4	8.95	8.55	8.30	8.40	8.70
30	21.05	.....	11.85	11.9	12.8	12.85	10.3	8.9	8.50	8.30	8.41	8.52
31	20.95	.....	12.05	.....	12.55	.....	10.2	8.85	.....	8.30	.....	8.35

NOTE.—Gage heights published for Jan. 9–16, Jan. 29–Feb. 3, and Mar. 2–10 determined by means of graph.

Daily discharge, in second-feet, of Merced River near Merced Falls, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	200	11,800	2,120	4,460	4,160	4,870	4,680	1,060	300	195	142	160
2	220	6,200	4,760	4,560	4,160	5,410	4,790	1,010	300	195	155	155
3	200	3,680	4,760	4,870	4,560	6,920	5,240	925	280	228	130	155
4	180	3,500	9,940	4,360	5,410	7,670	5,010	850	280	245	135	160
5	180	2,760	9,940	5,740	6,680	8,180	5,010	850	262	195	142	155
6	200	2,180	7,800	5,630	5,300	8,700	5,240	815	245	195	130	168
7	200	1,740	16,800	4,460	4,560	8,180	5,120	715	245	195	142	210
8	200	2,060	15,300	4,060	4,660	7,800	4,570	715	210	228	130	217
9	260	1,800	15,100	4,060	5,080	7,540	3,850	715	210	195	135	183
10	1,380	1,630	15,100	4,060	4,870	8,180	3,750	685	195	195	168	155
11	618	2,390	8,180	3,680	5,190	9,380	4,050	655	180	183	280	168
12	865	2,060	5,630	3,410	5,520	10,400	3,750	655	195	210	280	175
13	6,970	2,830	4,260	3,240	5,190	10,500	3,750	595	210	168	180	155
14	2,750	3,680	3,680	3,070	5,190	10,200	3,660	568	180	168	186	155
15	3,160	2,320	3,410	2,990	4,560	9,430	3,750	515	168	228	175	150
16	1,320	1,860	3,240	3,150	3,960	9,580	6,220	490	155	170	180	158
17	755	1,630	3,240	3,320	3,870	9,890	4,360	468	142	160	245	160
18	585	1,470	3,150	3,590	3,780	9,740	4,460	445	155	155	245	183
19	525	1,520	3,320	3,960	4,660	9,580	3,560	445	150	135	180	170
20	685	1,580	3,150	4,060	5,860	9,280	3,030	445	150	100	195	150
21	2,990	1,370	3,240	4,060	6,800	9,130	2,540	445	145	130	217	135
22	1,610	1,320	3,150	4,160	7,540	7,420	2,250	422	155	130	195	120
23	828	1,230	3,150	4,760	8,570	6,480	2,110	400	168	120	180	124
24	6,700	1,280	3,150	5,190	8,180	5,240	2,040	360	228	142	175	142
25	15,200	1,140	3,150	5,630	6,920	4,570	1,920	360	288	130	168	142
26	3,950	1,100	3,240	5,740	5,740	5,720	1,620	360	245	130	175	155
27	2,280	1,100	3,320	4,980	5,970	6,740	1,460	360	228	130	168	128
28	1,490	1,050	3,410	4,360	6,320	6,740	1,510	320	210	135	155	138
29	6,190	.....	3,590	3,960	6,560	5,840	1,300	340	195	130	155	245
30	37,200	.....	3,780	3,870	5,740	5,360	1,200	320	180	130	158	186
31	36,800	.....	4,160	.....	5,190	.....	1,100	300	.....	130	.....	142

NOTE.—Daily discharge determined from three fairly well-defined rating curves applicable Jan. 1, 1909, to Jan. 31, 1911, Feb. 1 to June 13, 1911, June 14 to Dec. 31, 1911.

Monthly discharge of Merced River near Merced Falls, Cal., for 1911.

[Drainage area, 1,090 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	37,200	180	4,410	4.05	4.67	271,000	B.
February	11,800	1,050	2,440	2.24	2.33	136,000	B.
March	16,800	2,120	5,810	5.33	6.14	357,000	A.
April	5,740	2,990	4,250	3.90	4.35	253,000	A.
May	8,570	3,780	5,510	5.06	5.83	339,000	A.
June	10,500	4,570	7,820	7.17	8.00	465,000	A.
July	6,220	1,100	3,450	3.17	3.66	212,000	B.
August	1,060	300	568	.521	.60	34,900	B.
September	300	142	208	.191	.21	12,400	B.
October	245	100	167	.153	.18	10,300	B.
November	280	130	177	.162	.18	10,500	B.
December	245	120	161	.148	.17	9,900	B.
The year	37,200	100	2,920	2.68	36.32	2,110,000	

SOUTH FORK OF MERCED RIVER NEAR WAWONA, CAL.

Location.—Opposite United States military camp in the SE. ¼ sec. 33, T. 4 S., R. 21 E., in the Sierra National Forest, 1 mile below Wawona. Big Creek enters half a mile above and Rush Creek three-fourths of a mile below the station.

Records available.—December 15, 1910 to December 31, 1911.

Drainage area.—Not measured.

Gage.—The original gage, which was a vertical staff fastened to the center pier of the footbridge, was destroyed by high water January 30, 1911. On August 22 a new gage was installed at an independent datum. It is a vertical staff fastened to an alder tree on left bank, 250 feet below former gage.

Channel.—Gravel and bowlders.

Discharge measurements.—Made from car and cable near present gage and by wading.

Diversions.—The ranch of the Wawona Co. is irrigated from a tributary above the station.

Cooperation.—Gage height record furnished by A. C. Leonard, park ranger. Discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

Discharge measurements of South Fork of Merced River near Wawona, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 22[a]	H. J. Tompkins	2.34	47
Nov. 7[b]	.....do	2.10	29

[a] Made by wading about 600 feet above gage. Gage installed at new datum and location.
[b] Made by wading 400 feet below gage.

Daily gage height, in feet, of South Fork of Merced River near Wawona, Cal., for 1911.

[A. C. Leonard, observer.]

Day.	Jan.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Jan.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.5	.....	2.20	2.25	.....	2.5	16	2.8	.....	2.25	2.20	2.2	2.8
2	1.5	.....	2.22	2.28	2.2	2.6	17	2.8	.....	2.25	2.20	2.2	2.8
3	1.4	.....	2.25	2.28	2.2	2.6	18	2.8	.....	2.25	2.20	2.2	2.8
4	1.5	.....	2.25	2.25	2.2	2.6	19	2.8	.....	2.25	2.20	2.2	2.9
5	1.6	.....	2.25	2.20	2.2	2.7	20	3.0	.....	2.25	2.20	2.2	2.9
6	1.6	.....	2.25	2.20	2.2	2.7	21	2.8	.....	2.28	2.21	2.2	2.9
7	1.5	.....	2.25	2.22	2.1	2.7	22	3.0	2.34	2.50	2.20	2.2	2.9
8	1.5	.....	2.25	2.20	2.1	2.8	23	3.0	.....	2.42	2.20	2.8	2.9
9	1.7	.....	2.25	2.20	2.1	2.8	24	4.0	.....	2.40	2.20	2.7	2.9
10	2.0	.....	2.25	2.25	2.2	2.8	25	5.0	.....	2.30	2.20	2.9	3.0
11	2.7	.....	2.25	2.25	2.2	2.7	26	4.0	2.25	2.30	2.20	2.8	2.9
12	3.8	.....	2.25	2.25	2.2	2.7	27	4.1	2.22	2.28	2.20	2.8	2.9
13	3.6	.....	2.25	2.22	2.2	2.8	28	4.5	2.25	2.20	2.21	2.8	2.9
14	3.0	.....	2.25	2.22	2.2	2.8	29	5.6	2.25	2.20	2.21	2.8	3.0
15	2.8	.....	2.25	2.20	2.2	2.8	30	.....	2.25	2.20	2.21	2.7	3.0
							31	.....	2.25	.....	.....	.....	3.0

NOTE.—Gage heights for August to December referred to different datum from those in January.

BIG CREEK NEAR WAWONA, CAL.

Location.—At highway bridge on the old Madera-Yosemite toll road at Summerdale (an abandoned post office) in sec. 23, T. 5 S., R. 21 E., about 4 miles south of Wawona.

Records available.—September 25, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to downstream end of left abutment of bridge.

Channel.—Gravel and sand and shifts at high stages.

Discharge measurements.—Made from bridge at gage or by wading. No measurements made during 1911.

Winter flow.—Somewhat affected by ice.

Diversions.—Madera Sugar Pine Co. diverts water from Rush Creek several miles above the station for use in lumber flume.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Daily gage height, in feet, of Big Creek near Wawona, Cal., for 1911.

[J. H. Lowery and M. McLeod, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	0.9						16		1.0				1.8
2	1.0	1.1					17	1.5					
3	1.1						18		1.0				
4							19	1.5					
5	1.1	.3					20						
6							21	1.3	1.0				
7							22	1.0					
8							23		1.0				
9							24	1.0					
10	.4	.6					25						1.0
11							26	.5					
12	.9						27						
13		.7					28						
14						1.6	29						
15						1.7	30	3.5					
							31	2.6					

NOTE.—Relation between gage height and discharge slightly affected by ice for short periods during January and February

TUOLUMNE RIVER NEAR LAGRANGE, CAL.

Location.—At Lagrange dam, in the SE. ¼ sec. 17, T. 3 S., R. 14 E., about 2 miles above Lagrange.

Records available.—August 30, 1895, to December 31, 1911.

Drainage area.—1,500 square miles.

Gage.—Painted on rock ledge on right bank 80 feet above dam. Zero of gage is at average elevation of crest of dam. Previous to April 1, 1908, gage was located at highway bridge at Lagrange.

Discharge.—Computed by means of weir formula from gage heights showing depth of water on crest of curved masonry diversion dam. Coefficient was determined from current meter measurements made at highway bridge, about 2 miles below the dam, corrected to give discharge at dam. To determine the total flow of Tuolumne River at Lagrange, the flow over the dam is added to the discharge of Modesto, Turlock, and Lagrange Water & Power Co.'s canals.

Diversions.—Modesto and Turlock canals divert at dam. Lagrange Water & Power Co.'s canal heads 13 miles above the dam. The water from the power canal is returned to the river below the dam and about half a mile above the bridge.

Accuracy.—Results are excellent except at extreme low water. The combined record of river and canals is slightly affected by seepage from dam and canals.

Daily gage height, in feet, of Tuolumne River on crest of dam near Lagrange, Cal., for 1911.

[J. W. Simmons, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.45	7.00	2.25	3.95	3.22	3.55	4.00	0.80				0.45
2		4.80	2.55	4.08	3.22	3.70	4.20	.62				.45
3		3.70	3.20	4.28	3.30	4.55	4.45	.45				.45
4		3.80	5.08	3.65	3.68	5.48	4.78	.40				
5	.40	3.30	4.84	4.72	4.65	5.85	4.55	.25				.35
6		2.90	4.16	4.90	3.90	6.10	4.62	.08				.35
7		2.60	7.35	3.82	3.48	5.70	4.65	.00				.40
8	.40	2.45	7.55	3.45	3.35	5.58	4.40					.35
9	.40	2.35	5.92	3.88	3.55	5.28	3.92					.35
10	1.85		6.05	3.65	3.40	5.68	3.80					.40

Daily gage height, in feet, of Tuolumne River on crest of dam near Lagrange, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
11	1.10	2.50	4.30	3.05	3.58	6.40	3.80	.....	.....	0.50	.....	0.35
12	1.79	2.20	3.52	2.80	3.92	6.70	3.85	.....	.....	.....	.....	.35
13	4.05	2.65	3.00	2.52	3.72	6.92	3.88	.....	.....	.....	.....	.35
14	3.52	2.50	2.82	2.48	3.70	6.55	4.25	.....	.....	.....	0.40	.35
15	2.65	2.30	2.76	2.35	3.25	6.38	4.12	.....	.....	.....	.....	.30
16	1.85	2.15	2.25	2.48	2.82	6.70	4.28	.....	.....	.....	.....	.35
17	1.50	2.00	2.40	2.58	2.60	6.75	4.35	.....	.....	.....	.....	.35
18	1.40	1.95	2.80	2.88	2.54	6.68	4.15	.....	.....	.....	.....	.35
19	1.35	1.95	2.80	3.28	3.18	6.70	3.55	.....	.....	.....	.....	.40
20	1.44	1.95	2.80	3.32	3.75	6.58	3.10	.....	.....	.....	.....	.35
21	3.02	1.85	2.80	3.22	4.30	6.45	3.48	.....	.....	.....	.30	.30
22	2.11	1.80	2.75	3.38	4.92	5.75	2.00	.....	.....	.....	.30	.35
23	1.98	1.68	2.98	3.72	5.58	5.15	1.92	.....	.....	.....	.45	.35
24	5.16	1.58	2.90	4.02	5.62	4.20	2.15	.....	.....	.....	.35	.....
25	5.66	1.52	3.02	4.30	4.65	3.70	1.92	.....	.....	.....	.40	.20
26	3.37	1.45	3.02	4.42	3.72	4.25	1.65	.....	.....	.....	.40	.....
27	2.50	1.50	3.02	4.08	3.85	5.15	1.45	.....	.....	.....	.35	.35
28	2.10	1.42	3.15	3.40	4.15	5.62	1.32	.....	.....	.....	.30	.35
29	4.51	.....	3.28	3.02	4.15	5.08	1.20	.....	.....	.....	.30	.35
30	14.98	.....	3.52	2.95	3.95	4.00	.....	.....	.....	.....	.35	.35
31	13.90	.....	3.75	.....	3.55	.....	.95	.....	.....	.....	.....	.35

NOTE.—All water in canals and none flowing over the dam Aug. 7 to Nov. 20, except Oct. 11 and Nov. 14. Also no water over the dam Dec. 4, 24, and 26. Jan. 2–4, 6, 7, 16–19, Feb. 10, and July 30, no reading by observer. Gage heights published for Jan. 12–14, 16–19, 20–26, 29, Feb. 1, Mar. 3–6, 8–9, and Apr. 6, determined by means of hydrographs.

Daily discharge, in second-feet, of Tuolumne River passing over dam near Lagrange, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	274	16,800	3,060	7,100	5,230	6,050	7,240	648	0	0	0	274
2	263	9,510	3,690	7,460	5,230	6,440	7,800	443	0	0	0	274
3	252	6,440	5,180	8,020	5,420	8,780	8,500	274	0	0	0	274
4	240	6,700	10,400	6,310	6,390	11,600	9,450	229	0	0	0	0
5	229	5,420	9,630	9,280	9,080	12,800	8,780	115	0	0	0	189
6	229	4,470	7,690	9,810	6,970	13,600	8,990	23	0	0	0	189
7	229	3,800	18,100	6,750	5,870	12,300	9,080	0	0	0	0	229
8	229	3,480	18,800	5,800	5,540	12,000	8,360	0	0	0	0	189
9	229	3,260	13,000	6,920	6,050	11,000	7,020	0	0	0	0	189
10	2,280	3,420	13,500	6,310	5,670	12,300	6,700	0	0	0	0	229
11	1,040	3,580	8,080	4,820	6,130	14,600	6,700	0	0	320	0	189
12	2,160	2,950	5,970	4,240	7,020	15,700	6,840	0	0	0	0	189
13	7,380	3,910	4,700	3,620	6,490	16,500	6,920	0	0	0	0	189
14	5,970	3,580	4,290	3,540	6,440	15,200	7,940	0	0	0	229	189
15	3,910	3,160	4,150	3,260	5,300	14,600	7,580	0	0	0	0	149
16	2,280	2,850	3,060	3,540	4,290	15,700	8,020	0	0	0	0	189
17	1,660	2,560	3,370	3,760	3,800	15,900	8,220	0	0	0	0	189
18	1,500	2,460	4,240	4,420	3,670	15,600	7,660	0	0	0	0	189
19	1,420	2,460	4,240	5,370	5,130	15,700	6,050	0	0	0	0	229
20	1,560	2,460	4,240	5,470	6,570	15,300	4,940	0	0	0	0	189
21	4,750	2,280	4,240	5,230	8,080	14,800	5,870	0	0	0	149	149
22	2,770	2,180	4,130	5,620	9,870	12,500	2,560	0	0	0	149	189
23	2,520	1,970	4,650	6,490	12,000	10,600	2,410	0	0	0	274	189
24	10,600	1,800	4,470	7,300	12,100	7,800	2,850	0	0	0	189	0
25	12,200	1,690	4,750	8,080	9,080	6,440	2,410	0	0	0	229	81
26	5,600	1,580	4,750	8,420	6,490	7,940	1,920	0	0	0	229	0
27	3,580	1,660	4,750	7,460	6,840	10,600	1,580	0	0	0	189	189
28	2,750	1,530	5,060	5,670	7,660	12,100	1,370	0	0	0	149	189
29	8,670	.....	5,370	4,750	7,660	10,400	1,180	0	0	0	149	189
30	52,500	.....	5,970	4,580	7,100	7,240	1,010	0	0	0	189	189
31	46,900	.....	6,570	.....	6,050	.....	838	0	.....	0	.....	189

NOTE.—Daily discharge determined from a rating curve developed from current-meter discharge measurements and the weir formula $Q=905\,b^{\frac{3}{2}}$. Jan. 2–4, 6, 7, Feb. 10, and July 30, discharge interpolated.

Combined daily discharge, in second-feet, of Tuolumne River and three canals near Lagrange, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	334	16,900	3,420	8,470	6,820	7,720	8,900	2,290	470	188	86	340
2	323	9,570	3,890	8,830	6,830	8,120	9,480	2,050	449	204	78	340
3	312	6,500	5,380	9,410	7,010	10,500	10,200	1,860	419	232	16	338
4	300	6,760	10,600	7,680	8,000	13,300	11,100	1,800	395	263	72	64
5	289	5,480	9,840	10,600	10,700	14,500	10,500	1,680	431	247	76	254
6	289	4,530	7,900	10,700	8,580	15,300	10,700	1,580	343	230	75	255
7	289	3,860	18,200	7,920	7,490	14,000	10,800	1,500	314	219	75	295
8	289	3,540	18,900	7,030	7,160	13,700	10,000	1,370	330	206	75	255
9	289	3,320	13,200	8,260	7,680	12,700	8,650	1,360	254	200	75	255
10	2,340	3,480	13,900	7,630	7,300	14,000	8,370	1,280	271	198	75	294
11	1,100	3,640	8,460	6,130	7,780	16,300	8,380	1,190	318	530	79	189
12	2,220	3,010	6,480	5,580	8,650	17,400	8,520	1,140	249	232	72	248
13	7,440	3,970	5,300	4,950	8,140	18,200	8,600	1,050	233	173	72	189
14	6,030	3,640	4,900	4,910	8,090	16,900	9,620	1,020	200	216	301	189
15	3,970	3,220	4,910	4,620	6,940	16,300	9,260	923	205	80	72	210
16	2,340	2,910	3,920	4,880	5,930	17,400	9,700	859	202	57	72	250
17	1,720	2,620	4,350	5,120	5,450	17,600	9,900	870	193	80	72	189
18	1,560	2,520	5,220	5,790	5,320	17,300	9,340	788	193	80	72	189
19	1,480	2,520	5,220	6,770	6,800	17,400	7,720	760	182	76	72	292
20	1,620	2,520	5,220	6,890	8,230	17,000	6,610	717	174	88	72	250
21	4,810	2,340	5,220	6,670	9,740	16,500	7,550	694	172	80	221	212
22	2,830	2,240	5,060	7,100	11,500	14,200	4,230	651	202	65	222	247
23	2,580	2,150	5,750	7,970	13,700	12,300	4,010	611	178	96	347	189
24	10,700	2,110	5,580	8,780	13,800	9,450	4,520	578	200	86	262	61
25	12,300	2,040	5,870	9,570	10,700	8,100	4,070	548	211	86	302	139
26	5,660	1,930	5,870	9,920	8,140	9,610	3,590	528	238	86	302	41
27	3,640	2,010	5,870	8,980	8,490	12,300	3,240	522	223	86	255	238
28	2,810	1,880	6,230	7,220	9,330	13,800	3,010	508	204	86	215	253
29	8,730	.....	6,600	6,310	9,320	12,100	2,510	495	201	78	215	248
30	52,600	.....	7,210	6,160	8,760	8,910	2,070	483	199	78	255	252
31	47,000	.....	7,870	.....	7,700	.....	2,410	476	.....	86	.....	252

NOTE.—Assumed 60 second-feet per day in Lagrange Water & Power Co.'s canal, Jan. 1 to Apr. 21, and included in above table.

Monthly discharge of Tuolumne River passing over dam near Lagrange, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	52,500	229	6,010	370,000	A.
February	16,800	1,530	3,860	214,000	A.
March	18,800	3,060	6,580	405,000	A.
April	9,810	3,260	5,980	356,000	A.
May	12,100	3,670	6,750	415,000	A.
June	16,500	6,050	12,100	720,000	A.
July	9,450	838	5,700	350,000	A.
August	648	0	55.9	3,440	B.
September	0	0	.0	0	A.
October	320	0	10.3	633	B.
November	274	0	70.8	4,210	B.
December	274	0	177	10,900	B.
The year	52,500	0	3,930	2,850,000	

Combined monthly discharge of Tuolumne River and three canals near Lagrange, Cal., for 1911.

[Drainage area, 1,500 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	52,600	289	6,070	4.05	4.67	373,000	A.
February	16,900	1,880	3,970	2.65	2.76	220,000	A.
March	18,900	3,420	7,300	4.87	5.62	449,000	A.
April	10,700	4,620	7,360	4.91	5.48	438,000	A.
May	13,800	5,320	8,390	5.59	6.44	516,000	A.
June	18,200	7,720	13,800	9.20	10.26	821,000	A.
July	11,100	2,070	7,340	4.89	5.64	451,000	A.
August	2,290	476	1,040	.693	.80	64,000	A.
September	470	172	262	.175	.20	15,600	B.
October	530	57	152	.101	.12	9,350	B.
November	347	16	142	.095	.11	8,450	B.
December	340	41	226	.151	.17	13,900	B.
The year	52,600	16	4,670	3.11	42.27	3,380,000	

MODESTO CANAL NEAR LAGRANGE, CAL.

Location.—Near intake at Lagrange dam, on right bank of Tuolumne River, in the SE. ¼ sec. 17, T. 3 S., R. 14 E., about 2 miles northeast of Lagrange.

Records available.—April 26, 1903 to December 31, 1911.

Gage.—Vertical iron staff in concrete well 460 feet below head gates and below waste gates. Previous to July 12, 1904, the gage was located at Indian Hill flume near Lagrange.

Discharge measurements.—Made from footbridge 550 feet below gage. This section of the canal is lined with concrete.

Accuracy.—Rating curve is well defined and results are excellent except at extreme low stages.

Discharge measurements of Modesto canal near Lagrange, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 13	J. E. Stewart	3.52	613
July 26	do	3.54	601
26	do	1.82	257
26	do	2.80	454

Daily gage height, in feet, of Modesto canal near Lagrange, Cal., for 1911.

[J. W. Simmons, observer.]

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	2.01	2.79	3.40	3.48	3.50	3.58	1.19	0.61	0.40
2	.....	1.20	2.79	3.38	3.50	3.58	3.60	1.15	.70	.30
3	.....	1.22	2.81	3.35	3.46	3.52	3.58	1.06	.....	.30
3	.....	1.30	2.75	3.40	3.51	3.58	3.56	1.02	.68	.30
5	.....	1.28	2.70	3.40	3.46	3.59	3.58	1.10	.70	.30
6	.....	1.25	.....	3.38	3.45	3.58	3.60	.90	.60	.30
7	.....	.....	2.78	3.40	3.46	3.52	3.46	.84	.58	.30
8	.....	.....	3.08	3.38	3.45	3.52	3.14	.90	.55	.30
9	.....	.....	3.15	3.41	3.48	3.62	2.91	.80	.....	.30
10	.....	1.70	3.10	3.38	3.48	3.58	2.72	.80	.....	.30

Daily gage height, in feet, of Modesto canal near Lagrange, Cal., for 1911—Continued.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
11	.....	1.52	3.04	3.43	3.50	3.56	2.45	0.85	0.50	0.30
12	.....	1.52	3.15	3.35	3.48	3.56	2.30	.61	.40	.20
13	.....	1.55	3.08	3.40	3.48	3.58	2.20	.62	.40	.20
14	.....	1.65	3.29	3.41	3.46	3.58	2.10	.75	.40	.20
15	.....	1.75	3.25	3.39	3.48	3.58	2.00	.55	.40	.20
16	.....	2.25	3.15	3.41	3.48	3.55	1.85	.60	.20	.20
17	.....	2.44	3.22	3.42	3.46	3.58	1.88	.57	.30	.20
18	.....	2.50	3.28	3.43	3.52	3.54	1.75	.60	.30	.20
19	.....	2.50	3.22	3.46	3.48	3.54	1.70	.55	.25	.20
20	.....	2.50	3.22	3.42	3.46	3.55	1.62	.55	.40	.20
21	.....	2.50	3.25	3.42	3.48	3.54	1.60	.52	.30	.20
22	.....	2.25	3.34	3.45	3.48	3.56	1.55	.62	.....	.20
23	.....	2.60	3.30	3.48	3.46	3.59	1.45	.50	.50	.20
24	1.78	2.68	3.31	3.42	3.48	3.55	1.40	.62	.40	.20
25	1.98	2.70	3.32	3.40	3.53	3.54	1.32	.60	.40	.20
26	1.98	2.70	3.29	3.40	3.52	3.55	1.31	.....	.40	.20
27	2.00	2.70	3.30	3.42	3.51	3.58	1.29	.75	.40	.....
28	1.98	2.70	3.34	3.50	3.49	3.58	1.25	.65	.40	.....
29	.....	2.70	3.35	3.46	3.50	.....	1.22	.65	.30	.....
30	.....	2.74	3.40	3.45	3.52	.....	1.20	.65	.30	.....
31	.....	2.75	.....	3.46	.....	3.28	1.20	.....	.40	.....

NOTE.—No water in canal Jan. 1 to Feb. 22, Mar. 8, July 30, Oct. 22, and Nov. 27 to Dec. 31. Water in canal during part of day only Feb. 23, Mar. 7 and 9, Apr. 6, and July 29. No reading Sept. 26, Oct. 3, 9, and 10.

Daily discharge, in second-feet, of Modesto canal near Lagrange, Cal., for 1911.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	0	296	452	574	590	594	610	134	44	22
2	0	136	452	570	594	610	614	126	55	14
3	0	140	456	564	586	598	610	110	54	14
4	0	155	444	574	596	610	606	103	53	14
5	0	151	434	574	586	612	610	117	55	14
6	0	146	220	570	584	610	614	84	43	14
7	0	70	450	574	586	598	586	75	41	14
8	0	0	510	570	584	598	522	84	38	14
9	0	120	524	576	590	618	476	69	36	14
10	0	234	514	570	590	610	438	69	34	14
11	0	198	502	580	594	606	384	76	32	14
12	0	198	524	564	590	606	354	44	22	7
13	0	204	510	574	590	610	334	45	22	7
14	0	224	552	576	586	610	314	62	22	7
15	0	244	544	572	590	610	294	38	22	7
16	0	344	524	576	590	604	264	43	7	7
17	0	382	538	578	586	610	270	40	14	7
18	0	394	550	580	598	602	244	43	14	7
19	0	394	538	586	590	602	234	38	10	7
20	0	394	538	578	586	604	218	38	22	7
21	0	394	544	578	590	602	214	34	14	7
22	0	344	562	584	590	606	204	45	0	7
23	120	414	554	590	586	612	184	32	32	7
24	250	430	556	578	590	604	174	45	22	7
25	290	434	558	574	600	602	159	43	22	7
26	290	434	552	574	598	604	157	52	22	7
27	294	434	554	578	596	610	153	62	22	0
28	290	434	562	594	592	610	146	49	22	0
29	.....	434	564	586	594	300	140	49	14	0
30	.....	442	574	584	598	0	136	49	14	0
31	.....	444	.....	586	.....	550	136	.....	22	.....

NOTE.—Daily discharge determined from a well-defined rating carve. Discharge estimated Feb. 23, Mar. 7 and 9, Apr. 6, and July 29. Discharge interpolated Sept. 26, Oct. 3, 9, and 10.

Monthly discharge of Modesto canal near Lagrange, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	0	0	0	0	A.
February	294	0	54.8	3,040	A.
March	444	0	292	18,000	A.
April	574	220	512	30,500	A.
May	594	564	577	35,500	A.
June	600	584	591	35,200	A.
July	618	0	575	35,400	A.
August	614	136	335	20,600	A.
September	134	32	63.3	3,770	A.
October	55	0	27.3	1,680	B.
November	22	0	8.9	530	C.
December	0	0	0	0	A.
The year	618	0	254	184,000	

TURLOCK CANAL NEAR LAGRANGE, CAL.

Location.—Below tunnel on left bank of Tuolumne River at Lagrange dam, about 2 miles northeast of Lagrange.

Records available.—July, 1899, to December 31, 1911.

Gage.—Vertical staff float in concrete well, 190 feet below intake and below the spillway.

Discharge measurements.—Made from footbridge at Morgan flume half a mile below gage.

Accuracy.—Results are good. It is believed that the gage height record is slightly affected by change in stage of river at intake.

Cooperation.—After June 30, 1911, gage height record was furnished by the Turlock irrigation district, through Burton Smith, chief engineer.

Discharge measurements of Turlock canal near Lagrange, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 13	J. E. Stewart	6.22	1,010
July 26	do	6.19	1,010
26	do	4.30	621
26	do	2.99	379

Daily gage height, in feet, of Turlock canal near Lagrange, Cal., for 1911.

[H. T. Sackett, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1		5.50	5.95	6.25	6.18	6.00	2.33	0.95
2		5.50	6.00	6.25	6.20	5.85	2.25	.95
3		5.55	6.00	6.25	6.20	5.75	2.15	1.70
4		5.50	6.05	6.30	6.20	5.70	2.05	1.45
5		5.55	6.02	6.25	6.20	5.65	2.19	1.32
6		4.45	6.05	6.23	6.20	5.60	1.82	1.30
7		4.50	6.08	6.18	6.20	5.45	1.68	1.25
8	0.50	4.50	6.10	6.20	6.20	5.12	1.75	1.22
9	.50	5.00	6.12	6.23	6.10	5.30	1.75	1.20
10	1.30	4.95	6.15	6.25	6.18	5.10	1.40	1.20

Daily gage height, in feet, of Turlock canal near Lagrange, Cal., for 1911—Continued.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
11	1.30	4.95	6.18	6.25	6.20	4.90	1.70	1.20
12	2.20	5.00	6.18	6.25	6.22	4.80	1.41	1.45
13	2.70	5.00	6.20	6.22	6.20	4.45	1.27	1.50
14	2.65	5.00	6.20	6.20	6.22	4.40	1.40	1.35
15	3.40	5.00	6.18	6.30	6.20	4.00	1.10	.....
16	3.40	5.00	6.18	6.22	6.20	3.82	1.05	.....
17	3.85	5.00	6.20	6.22	6.20	3.85	1.00	.....
18	3.80	5.00	6.18	6.22	6.20	3.55	1.00	.....
19	3.80	5.20	6.28	6.22	6.18	3.45	.95	.....
20	3.80	5.30	6.25	6.20	6.18	3.30	.95	.....
21	3.80	5.40	6.25	6.22	6.20	3.20	.85	.....
22	3.80	5.50	6.25	6.20	6.18	3.00	1.00	.....
23	4.30	5.52	6.25	6.20	6.12	2.88	.92	.....
24	4.30	5.52	6.22	6.18	6.15	2.75	1.00	.....
25	4.30	5.52	6.18	6.18	6.15	2.65	1.10	.....
26	4.30	5.60	6.20	6.22	6.15	2.55	1.25	.....
27	4.30	5.70	6.20	6.22	6.10	2.53	1.05	.....
28	4.60	5.80	6.20	6.20	6.02	2.48	1.00	.....
29	4.90	5.85	6.20	6.18	6.00	2.45	1.00	.....
30	4.90	5.90	6.23	6.20	6.15	2.40	1.00	.....
31	5.20	.....	6.18	.....	5.98	2.35	.....	.....

NOTE.—No water in canal Jan. 1 to Mar. 7 and Oct. 15 to Dec. 31.

Daily discharge, in second-feet, of Turlock canal near Lagrange, Cal., for 1911.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1	0	861	956	1,020	1,000	966	272	86
2	0	861	966	1,020	1,010	934	259	86
3	0	872	966	1,020	1,010	914	244	178
4	0	861	976	1,030	1,010	903	228	144
5	0	872	970	1,020	1,010	892	250	128
6	0	650	976	1,010	1,010	882	195	126
7	0	660	983	1,000	1,010	850	175	120
8	40	660	987	1,010	1,010	784	185	116
9	40	760	991	1,010	1,010	820	185	114
10	126	750	998	1,020	1,000	780	138	114
11	126	750	1,000	1,020	1,010	740	178	114
12	251	760	1,000	1,020	1,010	720	139	144
13	332	760	1,010	1,010	1,010	650	122	151
14	324	760	1,010	1,010	1,010	641	138	132
15	453	760	1,000	1,030	1,010	565	102	0
16	453	760	1,000	1,010	1,010	531	96	0
17	536	760	1,010	1,010	1,010	536	91	0
18	527	760	1,000	1,010	1,010	480	91	0
19	527	800	1,020	1,010	1,000	462	86	0
20	527	820	1,020	1,010	1,000	435	86	0
21	527	840	1,020	1,010	1,010	417	74	0
22	527	861	1,020	1,010	1,000	383	91	0
23	622	865	1,020	1,010	991	363	82	0
24	622	865	1,010	1,000	998	340	91	0
25	622	865	1,000	1.000	998	324	102	0
26	622	882	1,010	1,010	998	307	120	0
27	622	903	1,010	1,010	987	304	96	0
28	680	924	1,010	1,010	970	296	91	0
29	740	934	1,010	1,000	966	291	91	0
30	740	945	1,010	1,010	998	283	91	0
31	800	.....	1,000	.....	962	275	.....	0

NOTE.—Daily discharge determined from a rating curve well defined above 200 second-feet.

Monthly discharge of Turlock canal near Lagrange, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	0	0	0	0	A.
February	0	0	0	0	A.
March	800	0	367	22,600	A.
April	945	650	813	48,400	A.
May	1,020	956	999	61,400	A.
June	1,030	1,000	1,010	60,100	A.
July	1,010	962	1,000	61,500	A.
August	966	275	583	35,800	A.
September	272	74	140	8,330	B.
October	178	0	56.5	3,470	C.
November	0	0	0	0	A.
December	0	0	0	0	A.
The year	1,030	0	417	302,000	

LAGRANGE WATER & POWER CO.'S CANAL NEAR LAGRANGE, CAL.

Location.—At the flume opposite Lagrange dam, about 1¼ miles above power house and 2 miles northeast of Lagrange.

Records available.—1908 to 1911 (not complete).

Gage.—Depth of water in flume is measured at reference point.

Discharge measurements.—Made in flume near point at which gage heights are observed.

Accuracy.—Results are good for period covered by gage heights.

Cooperation.—Gage-height record furnished by Turlock irrigation district through Burton Smith, chief engineer.

The Lagrange Water & Power Co.'s canal takes water from the south side of Tuolumne River at Indian Bar, about 15 miles above the town of Lagrange. This canal was built in the early days to supply water for hydraulic mining in the vicinity of Lagrange, and it is now locally known as the "old mining ditch." Recently it has been thoroughly repaired and is now used as a supply canal for the new hydroelectric plant which was installed in the latter part of 1907. The power house is situated on the bank of the river about half a mile above the town of Lagrange and is below the dam and headworks of the Turlock and Modesto irrigation canals.

Discharge measurements of Lagrange Water & Power Co.'s canal near Lagrange, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 16[a]	J. E. Stewart	2.04	42
May 13[a]	do	2.72	65

[a] Made in flume opposite the Lagrange dam.

Daily gage height, in feet, of Lagrange Water & Power Co.'s canal near Lagrange, Cal., for 1911.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.67	2.72	2.70	2.68	2.70	2.52	2.70	2.73
2	.....	2.68	2.70	2.70	2.65	2.70	2.65	2.70	2.73
3	.....	2.68	2.72	2.70	2.55	2.72	.00	.25	2.70
4	.....	2.70	2.73	2.70	2.48	2.70	2.73	2.50	2.70
5	.....	2.73	2.72	2.70	2.55	2.70	2.70	2.62	2.72
6	.....	2.73	2.72	2.70	2.60	2.70	2.60	2.60	2.74
7	.....	2.73	2.72	2.70	2.65	2.70	2.50	2.60	2.75
8	.....	2.72	2.70	2.70	2.60	2.60	2.35	2.60	2.75
9	.....	2.72	2.70	.00	2.67	.00	2.30	2.60	2.74
10	.....	2.72	2.65	2.69	2.70	2.70	2.30	2.60	2.72
11	.....	2.74	2.72	2.70	2.70	2.70	2.70	2.72	.00
12	.....	2.72	2.72	2.69	2.70	2.75	2.74	2.72	2.55
13	.....	2.73	2.72	2.70	2.70	2.75	.00	2.72	.00
14	.....	2.73	2.72	2.70	2.70	.00	2.62	2.72	.00
15	.....	2.73	2.72	2.70	2.70	2.72	2.50	2.72	2.60
16	.....	2.72	2.70	2.70	2.70	2.65	2.30	2.72	2.60
17	.....	2.72	2.70	2.70	2.70	2.62	2.74	2.72	.00
18	.....	2.72	2.70	2.70	2.70	2.55	2.73	2.72	.00
19	.....	2.72	2.70	2.69	2.70	2.52	2.73	2.72	2.65
20	.....	2.72	2.70	2.70	2.70	2.30	2.73	2.72	2.60
21	.....	2.72	2.70	2.70	2.65	2.70	2.73	2.72	2.65
22	2.63	2.73	2.70	2.70	2.70	2.73	2.72	2.73	2.50
23	2.64	2.73	2.70	.00	2.70	2.70	2.70	2.73	.00
24	2.64	2.73	2.70	2.70	2.70	2.70	2.68	2.73	2.60
25	2.65	2.72	2.72	2.70	2.72	2.73	2.68	2.75	2.50
26	2.67	2.70	2.72	2.69	2.70	2.73	2.70	2.75	2.00
27	2.65	2.65	2.72	2.58	2.72	2.72	2.70	2.74	2.25
28	2.65	2.67	2.72	2.50	2.73	2.70	2.70	2.74	2.70
29	2.70	2.70	2.70	2.65	2.70	2.60	2.68	2.74	2.55
30	2.70	2.72	2.70	2.65	2.70	2.55	2.68	2.74	2.65
31	.....	2.72	.....	2.65	2.72	.....	2.70	.....	2.65

Daily discharge, in second-feet, of Lagrange Water & Power Co.'s canal near Lagrange, Cal., for 1911.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	63	65	64	64	64	58	64	66
2	.....	64	64	64	63	64	63	64	66
3	.....	64	65	64	59	65	0	2.5	64
4	.....	64	66	64	57	64	66	58	64
5	.....	66	65	64	59	64	64	62	65
6	.....	66	65	64	61	64	61	61	66
7	.....	66	65	64	63	64	58	61	66
8	.....	65	64	64	61	61	52	61	66
9	.....	65	64	0	63	0	50	61	66
10	.....	65	63	64	64	64	50	61	65
11	.....	66	65	64	64	64	64	65	0
12	.....	65	65	64	64	66	66	65	59
13	.....	66	65	64	64	66	0	65	0
14	.....	66	65	64	64	0	62	65	0
15	.....	66	65	64	64	65	58	65	61
16	.....	65	64	64	64	63	50	65	61
17	.....	65	64	64	64	62	66	65	0
18	.....	65	64	64	64	59	66	65	0
19	.....	65	64	64	64	58	66	65	63
20	.....	65	64	64	64	50	66	65	61
21	.....	65	64	64	63	64	66	65	63
22	62	66	64	64	64	66	65	66	58
23	62	66	64	0	64	64	64	66	0
24	62	66	64	64	64	64	64	66	61
25	63	65	65	64	65	66	64	66	58
26	63	64	65	64	64	66	64	66	41
27	63	63	65	60	65	65	64	66	49
28	63	63	65	58	66	64	64	66	64
29	64	64	64	63	64	61	64	66	59
30	64	65	64	63	64	59	64	66	63
31	.....	65	.....	63	65	.....	64	.....	63

NOTE.—Daily discharge determined from a rating curve well defined above 10 second-feet.

Monthly discharge of Lagrange Water & Power Co.'s canal near Lagrange Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	.....	.....	60	3,690	B.
February	.....	.....	60	3,330	B.
March	.....	.....	60	3,690	B.
April	.....	.....	60.9	3,620	B.
May	66	63	65.0	4,000	A.
June	66	63	62.5	3,720	A.
July	64	0	59.5	3,660	A.
August	66	57	63.3	3,890	A.
September	66	0	58.9	3,500	A.
October	66	0	57.8	3,550	A.
November	66	2.5	62.2	3,700	A.
December	66	0	49.6	3,050	A.
The year	66	0	60.1	43,400	

NOTE.—Inquiry of Mr. Burton Smith indicates that 60 second-feet is a fair estimate of the average daily discharge from Jan. 1 to Apr. 21.

JAWBONE CREEK NEAR TUOLUMNE, CAL.

Location.—At Jawbone ranger station, in the NE. ¼ sec. 33, T. 1 N., R. 18 E., in the Stanislaus National Forest, 1½ miles above junction with Tuolumne River and about 12 miles southeast of Tuolumne.

Records available.—September 13, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in two sections fastened to an alder tree on right bank 100 feet below trail crossing.

Channel.—Gravel and bowlders and will shift at high stages.

Discharge measurements.—Made from old bridge about 1,000 feet below gage and by wading.

Winter flow.—Somewhat affected by ice.

Diversions.—Small irrigation ditch at ranger's station above the gage.

Accuracy.—Results are fair but estimates are withheld for more measurements.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Jawbone Creek near Tuolumne, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 29	Egbert and Clark	2.78	247
June 17	H. J. Tompkins	.65	46
Aug. 29[a]	.....do	− .25	6.9

[a] Made by wading 100 feet below gage. Ranger ditch carried about one-half second-foot.

Daily gage height, in feet, of Jawbone Creek near Tuolumne, Cal., for 1911.

[J. B. Pestoni, H. L. Mero, and B. F. Tyler, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.60	0.25	1.48	1.45	1.10	0.26	.....	.....	−0.23	0.11	.....
2	.....	1.20	.22	1.50	1.45	1.08	.25	.....	−0.35	− .18	.11	0.30
3	.....	1.00	.68	1.55	1.45	1.08	.23	.....	− .35	.....	.10	.30
4	0.30	1.00	.90	1.45	1.45	1.00	.20	.....	− .35	.....	.10	.35
5	.30	.80	.92	2.20	1.52	1.00	.19	.....	− .35	.....	.11	.35
6	.30	.70	.90	2.10	1.45	1.00	.16	.....	− .34	− .18	.10	.44
7	.29	.60	1.35	1.80	1.45	1.00	.15	.....	− .34	.....	.10	.....
8	.29	.52	1.75	1.70	1.35	.97	.12	.....	− .35	.....	.....	.35
9	.31	.48	1.75	1.80	1.40	.93	.12	.....	− .35	.....	.....	.33
10	.70	.42	1.75	1.70	1.35	.89	.80	.....	− .36	.....	.....	.34
11	.52	.45	1.38	1.60	1.38	.87	.50	.....	− .37	− .06	.32	.30
12	.50	.45	1.20	1.50	1.35	.84	.....	.....	− .37	− .01	.31	.31
13	.75	.42	1.10	1.40	1.35	.82	.60	.....	− .37	.00	.31	.....
14	.80	.45	1.02	1.40	1.32	.78	.....	.....	− .38	+ .02	.30	.32
15	.81	.40	1.00	1.38	1.28	.70	.20	.....	− .38	.....	.....	.....
16	.65	.40	1.00	1.40	1.25	.70	.....	.....	− .38	.01	.35	.....
17	.60	.40	1.03	1.42	1.20	.68	.....	.....	− .38	.00	.33	.....
18	.55	.38	1.02	1.43	1.20	.63	.....	.....	− .38	.06	.33	.....
19	.50	.....	1.07	1.44	1.20	.60	.....	.....	− .38	.07	.....	.....
20	1.20	.30	1.09	1.50	1.22	.55	.....	.....	− .39	.09	.....	.48
21	1.20	.26	1.10	1.45	1.25	.52	.....	.....	− .39	.10	.30	.48
22	.92	.25	1.05	1.45	1.30	.50	.....	.....	− .39	.07	.31	.....
23	.80	.28	1.10	1.50	1.30	.47	.....	.....	− .36	.....	.....	.....
24	2.10	.25	1.10	1.55	1.25	.44	.....	−0.24	− .38	.08	.....	.38
25	2.00	.20	.....	1.60	1.25	.41	.....	− .25	− .35	.08	.....	.37
26	1.32	.80	1.30	1.60	1.20	.40	.....	− .25	− .36	.08	.....	.42
27	1.10	.20	1.20	1.55	1.15	.38	.....	− .25	− .37	.....	.....	.34
28	1.00	.15	1.20	1.45	1.15	.35	.....	− .25	− .33	.14	.....	.39
29	3.15	.....	1.25	1.45	1.12	.32	.....	− .27	− .27	.13	.....	.42
30	3.72	.....	1.35	1.45	1.10	.30	.....	− .30	− .25	.....	.....	.42
31	3.00	.....	1.40	.....	1.10	.....	.....	− .35	.....	.....	.....	.....

NOTE.—Ice for short periods January, February, and the latter part of December. Water surface below zero of the gage July 16 to Aug. 23. Creek rose to 5 feet during night of Jan. 31.

CORRAL CREEK NEAR GROVELAND, CAL.

Location.—At Clavey trail crossing, 1 mile west of Jawbone ranger station, in Stanislaus National Forest, 2 miles above junction with Tuolumne River, and 15 miles northwest of Groveland.

Records available.—October 21, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to an alder tree on right bank at trail crossing.

Channel.—Bowlders and gravel; rough.

Discharge measurements.—Made by wading.

Winter flow.—Probably affected by ice.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are secured.

Discharge measurements of Corral Creek near Groveland, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
June 18[a]	H. J. Tompkins	0.85	2.8
Aug. 29[a]	.....do	.70	1.1

[a] Made by wading.

Daily gage height, in feet, of Corral Creek near Groveland, Cal., for 1911.

[J. B. Pestoni, H. L. Mero, and B. F. Tyler, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.70				0.95						
2				1.20								
3						.92		0.77				
4		1.50	1.60	1.15								0.80
5	0.70											.80
6										0.78	0.76	.85
7						.90	0.82					.80
8		1.20	2.10			.90			0.72			.79
9		1.15		1.50	1.00		.80					.79
10						.87	.72					
11							.79					
12							.82			.78		.78
13							.82					
14	1.10											
15	1.00	1.10						.71		.75	.80	
16	.82			1.10				.72				.78
17					.80				.72		.80	
18	.72	1.10				.85	.79		.72			
19							.80					
20	2.00	1.50					.78			.79		
21	1.20	1.10					.80					.80
22	.98										.77	.79
23			1.40				.78					
24	2.50		1.40					.74				
25				1.10	.95		.74					
26			1.30									
27												
28	1.10		1.20			.82	.74	.70		.77		
29				1.05			.78	.70				
30				1.08			.76					
31												

SOUTH FORK OF TUOLUMNE RIVER NEAR GROVELAND, CAL.

Location.—At South Fork trail bridge, in Stanislaus National Forest, one-fourth mile above junction with Tuolumne River and about 10 miles east of Groveland. The Middle Fork enters about 2½ miles above the station.

Records available.—September 13, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on middle pier of bridge.

Channel.—Bowlders and gravel.

Discharge measurements.—Made by wading.

Diversions.—At the Hardin ranch, 7 miles above the mouth, water is diverted to develop power and is not returned to the river.

Cooperation.—Gage height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

The following discharge measurement was made by H. J. Tompkins by wading below the gage:

August 28, 1911: Gage height, 0.70 feet; discharge, 26 second-feet.

Daily gage height, in feet, of South Fork of Tuolumne River near Groveland, Cal., for 1911.

[J. B. Pestoni and B. F. Tyler, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1			2.2	3.6				1.18				
2												
3	0.8				3.5					0.82		
4											0.81	
5				4.85		4.0						0.89
6			3.5						0.80			
7												
8		1.75	4.5								.80	
9							1.12					
10						4.0						
11												.80
12				3.5							.92	.80
13						3.8			.70			.79
14		2.75		3.5							1.02	
15			2.3	3.5		3.7						
16		2.5			3.2							
17						3.8						
18							1.88				.90	
19				3.5								.80
20			3.0									
21								.82	.70			
22		2.3	3.2			3.4						
23					3.9	3.4				.80		
24						3.25				.80		
25	4.0						1.48					
26				3.8					.79			.79
27	2.3											
28								.70				
29					3.2					.84		
30			2.75									
31								.70		.80		

CLAVEY RIVER NEAR TUOLUMNE, CAL.

Location.—Below Luke Meadow trail bridge, in the NW. ¼ SW. ¼ sec. 24, T. 1 N., R. 17 E., M. D. M., in the Stanislaus National Forest, about 11 miles above junction with Tuolumne River, and 10 miles southeast of Tuolumne.

Records available.—September 12, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in two sections on left bank 150 feet below trail bridge.

Channel.—Bowlders and solid rock; is rough; current swift at all stages.

Discharge measurements.—Made by wading.

Cooperation.—Gage height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements can be made.

The following discharge measurement was made by H. J. Tompkins by wading:

August 30, 1911: Gage height, 1.05 feet; discharge, 31 second-feet.

Daily gage height, in feet, of Clavey River near Tuolumne, Cal., for 1911.

[J. B. Pestoni and B. F. Tyler, observers.]

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.0				5.8						
2				6.0							
3					5.55						
4	5.0								0.95		
5											2.00
6										0.85	
7										.86	
8	3.8										
9	3.8			5.8		3.6					
10					6.0						
11						3.45					
12											
13											
14							1.4				
15							1.2		.9	.99	
16											.94
17					5.5			1.0		1.07	
18	3.0			4.9			1.5	.95			.69
19							1.5				
20	3.0									1.35	
21	2.98				5.1						.80
22									1.1	1.00	.96
23						2.5					
24		5.0									
25											
26		5.2							.85		
27											
28		6.0							.9		
29			5.8			2.0					
30			5.85			2.05	1.05				
31											

INDIAN CREEK [1] NEAR TUOLUMNE, CAL.

Location.—At Clavey River trail bridge, in the Stanislaus National Forest, 300 feet above mouth, and about 10 miles southeast of Tuolumne, Indian Creek joins Clavey River about half a mile below mouth of Reed Creek and 1 mile above mouth of Quilty Creek.

Records available.—October 22, 1910, to June 10, 1911.

Drainage area.—Not measured.

Channel.—Bowlders and gravel; rough.

Discharge measurements.—Made by wading. No measurements were made during 1911.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

[1] Also known as Bear Creek.

Daily gage height, in feet, of Indian Creek near Tuolumne, Cal., for 1911.

[J. B. Pestoni, observer.]

Day.	Feb.	Mar.	Apr.	May.	June.	Day.	Feb.	Mar.	Apr.	May.	June.
1	3.0			1.4		16					
2						17					
3						18	1.5				
4	2.5					19					
5						20	1.5				
6						21	1.5				
7						22					
8	1.0					23					
9	2.7			1.3		24		2.4			
10					1.0	25					
11						26		2.5			
12						27					
13				1.3		28		2.3			
14						29			1.5		
15						30			1.45		
						31					

NORTH FORK OF TUOLUMNE RIVER NEAR TUOLUMNE, CAL.

Location.—At Providence Mine highway bridge, in the Stanislaus National Forest, in the SE. ¼ sec. 9, T. 1 N., R. 16 E., about 2 miles southeast of Tuolumne. Basin Slope Creek enters about 3 miles above and Hunter Creek 2 miles below the station.

Records available.—September 11, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to left abutment of bridge. August 31, 1911, a new vertical staff for low water was installed 100 feet below bridge at a different datum.

Channel.—Solid rock, small bowlders, and sand. Section is rough and will shift at high water.

Discharge measurements.—Made from bridge or by wading.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

Discharge measurements of North Fork of Tuolumne River near Tuolumne, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
June 19[a]	H. J. Tompkins	1.48	115
Aug. 31[b]	.....do	[c] 1.92	18

[a] Made by wading.
[b] Made by wading 100 feet above bridge.
[c] Referenced to new gage established Aug. 31 at new location and datum. See station description. Old gage read 0.50 foot.

Daily gage height, in feet, of North Fork of Tuolumne River near Tuolumne, Cal., for 1911.

[J. B. Pestoni and H. L. Mero, observers.]

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.5			2.75	2.0			1.9			
2											
3					2.0	1.0					2.02
4	2.5										
5											
6											
7											
8											
9											
10					1.9	.6					
11								1.9			
12					1.9						
13			2.75								
14											
15											
16											
17				2.2	1.65						
18				2.75							
19					1.48						
20											
21											
22											
23		2.8									
24											
25											
26		2.8									
27		3.0									
28											
29								1.95			
30			2.7								
31							1.92				

NOTE.—Gage heights August to December referred to new datum.

HUNTER CREEK NEAR TUOLUMNE, CAL.

Location.—At Luke Meadow ford, in the NW. ¼ NE. ¼ sec. 19, T. 1 N., R. 17 E., in the Stanislaus National Forest, about 5 miles above junction with North Fork of Tuolumne River and 6 miles southeast of Tuolumne.

Records available.—September 11, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to an alder tree on left bank, 50 feet above ford.

Channel.—Coarse gravel; slightly shifting.

Discharge measurements.—Made by wading.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

Discharge measurements of Hunter Creek near Tuolumne, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
June 19[a]	H. J. Tompkins	0.63	3.4
Aug. 30[b]	....do	.35	1.0

[a] Made by wading below the gage and below the ford.
[b] Made from banks about 100 feet below gage.

Daily gage height, in feet, of Hunter Creek near Tuolumne, Cal., for 1911.

[J. B. Pestoni and B. F. Tyler, observers.]

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.00			0.80	0.70		0.46	0.38			
2							.43	.36			
3					.70	0.52	.45	.38			
4	1.20						.46	.41	0.48		
5							.45	.41			
6							.45	.41			
7							.46	.41			
8							.46	.41			
9	.91					.50	.45	.41			
10					.67	.50	.45	.41			
11								.39			
12							.46	.41			
13			.90				.40	.41			
14							.42	.38			
15							.40	.39			
16							.43	.40			
17				.70	.65		.44	.38			
18	.88			.75			.43	.40			
19					.63		.42	.39			
20	.90							.38			
21	.84						.42	.39			
22							.42	.40	.44	0.44	0.54
23		1.12						.41		.54	
24						.50	.40	.40			
25		1.10				.50	.37	.41			
26		1.10				.50	.38		.47		
27		1.20				.50	.38		.49		
28						.50	.40	.40			
29						.47	.40				
30			.83			.49	.38	.42			
31							.40				

STANISLAUS RIVER AT KNIGHTS FERRY, CAL.

Location.—At Knights Ferry, in the NE. ¼ sec. 29, T. 1 S., R. 12 E., about 25 miles below mouth of South Fork, and 12 miles northeast of Oakdale.

Records available.—May 19, 1903, to December 31, 1911. From May 3, 1895, to February 16, 1901 a station was maintained one-half mile north of Oakdale.

Drainage area.—935 square miles.

Gage.—Staff in five sections on right bank; four vertical and one inclined. The original gage datum has been maintained although several changes have been made in the gage. Zero of gage is 157.53 feet above sea level, United States Geological Survey datum.

Channel.—Small bowlders and gravel; slightly shifting at high stages.

Discharge measurements.—Car and cable 25 feet above gage.

Storage and diversions.—Ditches diverting water for use in mining are numerous above the station. Water is also diverted from the South Fork into the Tuolumne basin and from the North Fork for use in the vicinity of Murphy and Angeles. The intake of the Stanislaus Water Co.'s canal is about 3 miles above Knights Ferry. This canal returns water below the station. Schell ditch diverts about 6 second-feet from this canal above the gaging station on the canal. Considerable storage is developed on Middle Fork of Stanislaus River for power purposes.

Accuracy.—Results are affected by the many diversions for irrigation and mining and by the operation of a power plant a short distance above the gage. Record is considered good except at extreme low water and flood stage.

The discharge of the river at this point is determined by combining the discharge at the river gaging station with the discharge of Stanislaus Water Co.'s canal and Schell's ditch.

Discharge measurements of Stanislaus River at Knights Ferry, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 16	J. E. Stewart	8.26	2,030
Mar. 10	do	11.70	8,510
May 12	do	11.08	7,270
June 14	W. V. Hardy	12.50	10,600
July 25	J. E. Stewart	7.34	1,630
Sept. 19	do	5.22	163

Daily gage height, in feet, of Stanislaus River at Knights Ferry, Cal., for 1911.

[E. J. Coop, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.85	13.25	8.40	11.10	10.39	10.35	9.42	.....	5.54	5.45	5.45	5.62
2	5.75	11.25	8.42	11.18	10.26	10.90	9.42	.....	5.40	5.40	5.38	5.50
3	5.70	10.32	9.18	11.39	10.24	11.40	9.58	6.45	5.62	5.45	5.35	5.56
4	5.78	10.20	10.92	10.71	11.02	11.82	9.70	6.28	5.60	5.35	5.45	5.56
5	5.80	9.72	10.80	11.25	11.68	12.05	9.58	6.30	5.58	5.42	5.40	5.50
6	5.76	9.38	10.84	11.95	10.60	12.15	9.68	6.14	5.45	5.36	5.28	5.68
7	5.90	9.05	14.02	11.00	10.28	11.95	9.58	6.00	5.38	5.45	5.35	5.40
8	5.66	8.76	13.65	10.62	10.18	11.78	9.36	6.02	5.40	5.30	5.32	5.50
9	5.84	8.62	12.08	11.15	10.45	11.68	9.05	6.02	5.32	5.28	5.36	5.46
10	6.95	8.48	11.52	10.75	10.32	11.95	8.94	6.09	5.33	5.30	5.55	5.44
11	6.55	8.82	10.52	10.22	10.55	11.35	9.04	5.92	5.34	5.31	5.72	5.52
12	7.61	8.40	9.90	9.92	10.92	12.75	9.20	5.96	5.31	5.34	5.65	5.38
13	10.33	9.42	9.65	9.62	10.68	12.55	8.95	5.90	5.30	5.28	5.70	5.48
14	8.70	9.20	9.40	9.42	10.58	12.30	9.00	5.80	5.16	5.30	5.63	5.48
15	8.46	8.98	9.22	9.30	10.10	12.22	8.65	5.85	5.30	5.34	5.62	5.45
16	7.18	8.34	9.15	9.32	9.79	12.35	8.88	5.82	5.30	5.31	5.65	5.45
17	6.72	8.08	9.12	9.49	9.66	12.30	8.62	5.85	5.20	5.26	5.65	5.58
18	6.65	8.05	9.15	9.80	9.42	12.24	8.75	.....	5.28	5.35	5.70	5.51
19	6.78	8.00	9.25	10.16	10.15	12.15	8.52	5.55	5.21	5.38	5.70	5.51
20	9.48	7.94	9.34	10.11	10.52	12.05	8.25	5.62	5.34	5.30	5.68	5.51
21	9.23	7.88	9.38	10.12	11.05	11.75	7.95	5.54	5.28	5.30	5.60	5.42
22	7.85	7.75	9.45	10.40	11.60	11.22	7.68	5.44	5.30	5.34	5.62	5.44
23	7.34	7.72	9.52	10.76	12.18	10.82	7.15	5.56	5.30	5.30	5.62	5.45
24	11.33	7.72	9.60	11.08	12.20	10.02	7.25	5.51	5.26	5.34	5.68	5.38
25	11.48	7.55	9.65	11.42	11.25	9.70	7.40	5.46	5.28	5.24	5.70	5.38
26	9.42	7.55	9.75	11.52	10.69	9.80	7.15	5.44	5.30	5.29	5.65	5.26
27	8.65	7.60	9.78	11.05	10.72	10.38	7.15	5.56	5.39	5.29	5.65	5.42
28	8.15	7.52	9.98	10.35	10.95	10.58	7.00	5.45	5.30	5.32	5.62	5.56
29	10.57	.....	10.12	9.95	11.05	10.08	.....	5.44	5.29	5.34	5.55	5.81
30	19.83	.....	10.38	10.00	10.95	9.80	.....	5.40	5.37	5.35	5.69	5.58
31	[a]20.14	.....	10.68	.....	10.38	.....	.....	5.40	.....	5.29	.....	5.61

[a] Crest height, 26 feet 4 a. m., Jan. 31.

NOTE.—Gage heights Jan. 12–16, 19–25, 29–31, and Mar. 3–10 determined by means of graph.

Daily discharge, in second-feet, of Stanislaus River at Knights Ferry, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	202	12,300	2,190	7,300	5,860	5,790	4,260	982	293	252	252	330
2	170	6,980	2,210	7,480	5,630	6,870	4,260	912	230	230	222	275
3	155	5,060	3,190	7,950	5,590	7,970	4,500	842	330	252	210	302
4	179	4,840	6,260	6,480	7,120	8,950	4,690	716	320	210	252	302
5	185	4,010	6,010	7,630	8,610	9,500	4,500	730	311	239	230	275
6	173	3,480	6,090	9,260	6,260	9,740	4,660	621	252	214	183	360
7	220	3,010	14,700	7,080	5,660	9,260	4,500	530	222	252	210	230
8	145	2,630	13,700	6,300	5,490	8,850	4,170	543	230	190	198	275
9	199	2,460	9,570	7,410	5,980	8,610	3,720	543	198	183	214	257
10	775	2,290	8,250	6,560	5,740	9,260	3,570	588	202	190	298	248
11	515	2,710	6,110	5,560	6,160	7,860	3,710	486	206	194	380	284
12	1,340	2,190	5,010	5,040	6,910	11,300	3,930	508	194	206	345	222
13	5,080	3,540	4,610	4,560	6,420	10,800	3,580	475	190	183	370	266
14	2,560	3,220	4,230	4,260	6,220	10,100	3,650	420	143	190	335	266
15	2,260	2,910	3,960	4,080	5,350	9,920	3,160	448	190	206	330	252
16	949	2,120	3,860	4,110	4,830	10,200	3,480	431	190	194	345	252
17	618	1,830	3,820	4,360	4,630	10,100	3,120	448	155	176	345	311
18	575	1,800	3,860	4,850	4,260	9,970	3,300	373	183	210	370	280
19	657	1,740	4,000	5,450	5,440	9,740	2,990	298	158	222	370	280
20	3,630	1,670	4,140	5,370	6,110	9,500	2,650	330	206	190	360	280
21	3,260	1,610	4,200	5,380	7,190	8,780	2,300	293	183	190	320	239
22	1,580	1,480	4,300	5,880	8,430	7,560	1,990	248	190	206	330	248
23	1,090	1,440	4,410	6,580	9,820	6,700	1,450	302	190	190	330	252
24	7,170	1,440	4,530	7,260	9,870	5,210	1,540	280	176	206	360	222
25	7,510	1,280	4,610	8,020	7,630	4,690	1,700	257	183	169	370	222
26	3,540	1,280	4,770	8,250	6,440	4,850	1,450	248	190	186	345	176
27	2,490	1,320	4,820	7,190	6,500	5,840	1,450	302	226	186	345	239
28	1,900	1,250	5,150	5,790	6,980	6,220	1,300	252	190	198	330	302
29	5,540	.....	5,380	5,100	7,190	5,320	1,220	248	186	206	298	426
30	35,600	.....	5,840	5,180	6,980	4,850	1,140	230	218	210	365	311
31	36,900	.....	6,420	.....	5,840	.....	1,060	230	.....	186	.....	325

NOTE.—Daily discharge determined from two fairly well-defined rating curves applicable Jan. 1 to Mar. 7 and Mar. 8 to Dec. 31. Discharge interpolated July 29 to Aug. 2 and Aug. 18.

Combined daily discharge, in second-feet, of Stanislaus River, Stanislaus Water Co.'s canal, and Schell ditch at Knights Ferry, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	249	12,300	2,200	7,310	5,960	5,900	4,380	1,090	396	347	268	336
2	213	6,990	2,220	7,490	5,730	6,980	4,380	1,020	333	325	238	281
3	204	5,070	3,200	7,960	5,690	8,080	4,620	953	336	344	226	308
4	222	4,850	6,270	6,530	7,220	9,060	4,800	827	326	305	268	308
5	234	4,020	6,020	7,680	8,710	9,610	4,620	841	347	334	246	281
6	216	3,490	6,100	9,320	6,360	9,850	4,780	732	355	309	199	366
7	259	3,020	14,700	7,140	5,760	9,370	4,570	637	325	344	226	236
8	194	2,640	13,700	6,370	5,600	8,960	4,290	654	337	282	214	281
9	242	2,470	9,580	7,490	6,090	8,720	3,840	654	301	275	230	263
10	803	2,300	8,260	6,660	5,850	9,370	3,690	699	305	278	314	254
11	538	2,720	6,120	5,660	6,270	7,970	3,820	597	309	282	391	290
12	1,380	2,200	5,020	5,140	7,020	11,400	4,040	619	297	298	351	228
13	5,130	3,550	4,620	4,660	6,530	10,900	3,690	582	293	271	376	272
14	2,600	3,230	4,240	4,360	6,330	10,200	3,760	523	246	278	341	272
15	2,340	2,920	3,970	4,180	5,460	10,000	3,280	555	293	294	336	258
16	1,010	2,130	3,870	4,210	4,940	10,300	3,590	534	293	282	351	258
17	674	1,840	3,830	4,460	4,740	10,200	3,230	551	250	245	351	317
18	628	1,810	3,870	4,950	4,370	10,100	3,410	476	278	273	376	286
19	708	1,750	4,010	5,550	5,550	9,850	3,100	401	257	271	376	286
20	3,680	1,680	4,150	5,470	6,220	9,610	2,760	433	301	239	366	286
21	3,310	1,620	4,210	5,480	7,300	8,890	2,420	396	278	239	326	245
22	1,610	1,490	4,310	5,980	8,540	7,670	2,100	355	285	255	336	254
23	1,100	1,450	4,420	6,680	9,930	6,810	1,560	409	289	239	336	258
24	7,180	1,450	4,540	7,360	9,980	5,320	1,650	383	275	255	366	228
25	7,520	1,290	4,620	8,120	7,740	4,800	1,810	360	278	218	376	228
26	3,550	1,290	4,780	8,350	6,550	4,960	1,560	351	289	235	351	182
27	2,500	1,330	4,830	7,290	6,610	5,950	1,560	409	321	235	351	245
28	1,910	1,260	5,160	5,890	7,090	6,330	1,410	355	285	247	336	308
29	5,550	.....	5,390	5,200	7,300	5,430	1,330	351	281	257	304	432
30	35,600	.....	5,850	5,280	7,090	4,960	1,250	333	313	259	371	317
31	36,900	.....	6,430	.....	5,950	.....	1,170	333	.....	235	.....	331

NOTE.—Schell ditch assumed to be carrying 6 second-feet throughout the year.

Monthly discharge of Stanislaus River at Knights Ferry, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	36,900	145	4,100	252,000	B.
February	12,300	1,250	2,920	162,000	A.
March	14,700	2,190	5,490	338,000	A.
April	9,260	4,080	6,190	368,000	A.
May	9,870	4,260	6,490	399,000	A.
June	11,300	4,690	8,140	484,000	A.
July	4,690	1,060	3,000	184,000	A.
August	982	230	455	28,000	A.
September	330	143	211	12,600	A.
October	252	169	204	12,500	A.
November	380	183	307	18,300	A.
December	426	176	274	16,800	A.
The year	36,900	143	3,140	2,280,000	

Combined monthly discharge of Stanislaus River, Stanislaus Water Co.'s canal, and Schell ditch at Knights Ferry, Cal., for 1911.

[Drainage area, 935 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	36,900	194	4,140	4.43	5.11	255,000	B.
February	12,300	1,260	2,930	3.13	3.26	163,000	A.
March	14,700	2,200	5,500	5.88	6.78	338,000	A.
April	9,320	4,180	6,270	6.71	7.49	373,000	A.
May	9,980	4,370	6,600	7.06	8.14	406,000	A.
June	11,400	4,800	8,250	8.82	9.84	491,000	A.
July	4,800	1,170	3,110	3.33	3.84	191,000	A.
August	1,090	333	565	.604	.70	34,700	A.
September	396	246	302	.323	.36	18,000	A.
October	347	218	276	.295	.34	17,000	A.
November	391	199	317	.339	.38	18,900	A.
December	432	182	280	.299	.34	17,200	A.
The year	36,900	182	3,210	3.43	46.58	2,320,000	

STANISLAUS WATER CO.'S CANAL AT KNIGHTS FERRY, CAL.

Location.—At private highway bridge about 200 feet below crossing of flume of Schell ditch, in the NW. ¼ sec. 29, T. 1 S., R. 12 E., about half a mile below Knights Ferry.

Records available.—June 11, 1904, to December 31, 1911.

Gage.—Vertical staff on left bank at bridge.

Discharge measurements.—Made from footplank 20 feet above gage. Section is coarse gravel and a little rough.

Accuracy.—Record does not include the flow of Schell ditch. Results are good.

Discharge measurements of Stanislaus Water Co.'s canal at Knights Ferry, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 12	J. E. Stewart	3.70	114
June 14	W. V. Hardy	3.62	87
July 25	J. E. Stewart	3.52	108
Sept. 19	.....do	3.38	95

Daily gage height, in feet, of Stanislaus Water Co.'s canal at Knights Ferry, Cal, for 1911.

[Otto Dolling, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	2.45	.....	.....	.....	3.4	3.5	3.6	3.45	3.4	3.3	1.45
2	2.35	.....	.....	1.3	3.4	3.5	3.6	3.5	3.4	3.3	1.85
3	2.5	.....	.....	1.3	3.4	3.5	3.6	3.5	.....	3.25	1.45
4	2.35	.....	.....	2.45	3.4	3.5	3.55	3.5	.....	3.3	1.45
5	2.5	.....	.....	2.45	3.4	3.5	3.55	3.5	.....	3.3	1.45
6	2.35	.....	.....	2.7	3.4	3.5	3.6	3.5	3.4	3.3	1.45
7	2.25	.....	.....	2.7	3.4	3.5	2.92	3.45	3.4	3.25	1.45
8	2.5	.....	.....	2.9	3.45	3.5	3.6	3.5	3.45	3.25	1.45
9	2.35	.....	.....	3.1	3.5	3.5	3.6	3.5	3.4	3.25	1.45
10	1.95	.....	.....	3.35	3.5	3.5	3.6	3.5	3.4	3.2	1.45
11	1.8	.....	.....	3.35	3.5	3.5	3.5	3.5	3.4	3.2	.....
12	2.25	.....	.....	3.4	3.5	3.5	3.5	3.5	3.4	3.25	.....
13	2.5	.....	.....	3.35	3.5	3.5	3.5	3.45	3.4	3.2	.....
14	2.25	.....	.....	3.35	3.5	3.5	3.5	3.4	3.4	3.2	.....
15	3.1	.....	.....	3.4	3.5	3.5	3.55	3.45	3.4	3.2	.....
16	2.8	.....	.....	3.4	3.5	3.5	3.5	3.4	3.4	3.2	.....
17	2.65	.....	.....	3.4	3.5	3.5	3.5	3.4	3.3	2.9	.....
18	2.6	.....	.....	3.4	3.5	3.5	3.5	3.4	3.3	2.8	.....
19	2.55	.....	.....	3.4	3.5	3.5	3.55	3.4	3.35	2.5	.....
20	2.6	.....	.....	3.4	3.5	3.5	3.55	3 4	3.3	2.5	.....
21	2.5	.....	.....	3.4	3.5	3.5	3.6	3.4	3.3	2.5	.....
22	1.9	.....	.....	3.4	3.5	3.5	3.5	3.45	3.3	2.5	.....
23	.....	.....	.....	3.4	3.5	3.5	3.5	3.45	3.35	2.5	.....
24	.....	.....	.....	3.4	3.5	3.5	3.5	3.4	3.35	2.5	.....
25	.....	.....	.....	3.4	3.5	3.5	3.5	3.4	3.3	2.5	.....
26	.....	.....	.....	3.4	3.5	3.5	3.5	3.4	3.35	2.5	.....
27	.....	.....	.....	3.4	3.5	3.5	3.5	3.45	3.3	2.5	.....
28	.....	.....	.....	3.4	3.5	3.5	3.5	3.4	3.3	2.5	.....
29	.....	.....	.....	3.4	3.5	3.5	3.5	3.4	3.3	2.55	.....
30	.....	.....	.....	3.4	3.5	3.5	3.5	3.4	3.3	2.5	.....
31	.....	.....	.....	.....	3.5	.....	3.5	3.4	.....	2.5	.....

NOTE.—No water in canal Jan. 23 to Mar. 31, Sept. 3 and 4, and Nov. 12 to Dec. 31. Water in canal part of day Apr. 1, Sept. 5, and Nov. 11.

Daily discharge, in second-feet, of Stanislaus Water Co.'s canal at Knights Ferry, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	41	.....	.....	4	97	105	113	101	97	89	10
2	37	.....	.....	7	97	105	113	105	97	89	10
3	43	.....	.....	7	97	105	113	105	0	86	10
4	37	.....	.....	41	97	105	109	105	0	89	10
5	43	.....	.....	41	97	105	109	105	30	89	10
6	37	.....	.....	52	97	105	113	105	97	89	10
7	33	.....	.....	52	97	105	64	101	97	86	10
8	43	.....	.....	63	101	105	113	105	101	86	10
9	37	.....	.....	75	105	105	113	105	97	86	10
10	22	.....	.....	93	105	105	113	105	97	82	10
11	17	.....	.....	93	105	105	105	105	97	82	5
12	33	.....	.....	97	105	105	105	105	97	86	0
13	43	.....	.....	93	105	105	105	101	97	82	0
14	33	.....	.....	93	105	105	105	97	97	82	0
15	75	.....	.....	97	105	105	109	101	97	82	0
16	57	.....	.....	97	105	105	105	97	97	82	0
17	50	.....	.....	97	105	105	105	97	89	63	0
18	47	.....	.....	97	105	105	105	97	89	57	0
19	45	.....	.....	97	105	105	109	97	93	43	0
20	47	.....	.....	97	105	105	109	97	89	43	0
21	43	.....	.....	97	105	105	113	97	89	43	0
22	20	.....	.....	97	105	105	105	101	89	43	0
23	0	.....	.....	97	105	105	105	101	93	43	0
24	0	.....	.....	97	105	105	105	97	93	43	0
25	0	.....	.....	97	105	105	105	97	89	43	0
26	0	.....	.....	97	105	105	105	97	93	43	0
27	0	.....	.....	97	105	105	105	101	89	43	0
28	0	.....	.....	97	105	105	105	97	89	43	0
29	0	.....	.....	97	105	105	105	97	89	45	0
30	0	.....	.....	97	105	105	105	97	89	43	0
31	0	.....	.....	.....	105	.....	105	97	.....	43	.....

NOTE.—Daily discharge determined from a well-defined rating curve. Discharge interpolated Apr. 1 and Nov. 11. Discharge estimated Sept. 5.

Monthly discharge of Stanislaus Water Co.'s canal at Knights Ferry, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January	75	0	28.5	1,750	B.
February	0	0	.0	0	A.
March	0	0	.0	0	A.
April	97	4	78.8	4,690	A.
May	105	97	103	6,330	A.
June	105	105	105	6,250	A.
July	113	64	106	6,520	A.
August	105	97	100	6,150	A.
September	101	0	85.2	5,070	A.
October	89	43	66.0	4,060	A.
November	10	0	3.5	208	C.
December	0	0	.0	0	A.
The year	113	0	56.7	41,000	

ROSE CREEK NEAR JUPITER, CAL.

Location.—Just above bridge at trail bridge in the SE. ¼ sec. 17, T. 3 N., R. 15 E., in the Stanislaus National Forest, about 2 miles northwest of Jupiter, about 2¾ miles above the junction with Stanislaus River. Eagle Creek enters 1½ miles above and Knight Creek 2½ miles below the station.

Records available.—September 8, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to a tree on right bank, 100 feet above the bridge.

Channel.—Gravel and small bowlders.

Discharge measurements.—Made by wading. No measurements were made during 1911.

Cooperation.—Gage height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

Daily gage height, in feet, of Rose Creek near Jupiter, Cal., for 1911.

[Oliver P. Brownlow, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1						0.82						
2					1.02	.82						
3												
4												
5				2.80								
6		2.00			1.05							0.62
7	0.49											
8						.79						.52
9												
10				1.55				0.52				
11					.92						0.50	
12		1.30					0.52					.50
13							.48			0.25	.45	
14				1.38		.70	.49	.28			.47	
15			1.75		.82			.25				
16												.49
17	1.02	1.35										
18												
19						.58					.43	
20		1.25										
21				1.20				.25				
22												
23	1.45				.85				0.25			
24				1.09	.84							
25				1.09		.62						
26					.82				.30			
27												
28	1.60											
29												
30												
31			1.60				.28					

KNIGHT CREEK NEAR JUPITER, CAL.

Location.—At trail ford in the SE. ¼ sec. 8, T. 3 N., R. 15 E., in the Stanislaus National Forest, about 5 miles west of Jupiter. Knight Creek joins Rose Creek about 2 miles below the station.

Records available.—September 9, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to an alder tree on right bank, 10 feet above trail crossing.

Channel.—Gravel and sand and is smooth.

Discharge measurements.—Made by wading. No measurements were made in 1911.

Diversions.—A small amount of water is diverted for irrigation above the station.

Cooperation.—Gage height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

Daily gage height, in feet, of Knight Creek near Jupiter, Cal., for 1911.

[H. C. Summers, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1					0.65	0.4				0.1		
2		3.0	1.7				0.3	0.1			0.2	0.45
3												
4					.6							
5	0.5					.35	.35				.25	
6												.45
7			2.1		.65			.1				
8						.35	.35				.3	
9												
10	2.0	1.6	2.0		.6					.2		
11				1.1								.45
12												
13	1.6				.6		.1					
14										.2	.3	
15			1.9									
16				1.1	.55							.45
17		1.8		.8			.1			.2	.35	
18	.8		1.2			.35						
19					.6							.5
20				.8			.1					
21	3.4					.35				.2	.35	
22					.5							.45
23												
24	3.0			.8								
25			1.2			.35	.1					
26					.5					.2	.4	.5
27		1.2		.8					0.1			
28												
29	3.4											.5
30			1.6	.65		.35	.1				.45	
31					.5					.2		

NOTE.—Water below gage from about Aug. 11 to about Sept. 26.

SOUTH FORK OF STANISLAUS RIVER NEAR CONFIDENCE, CAL.

Location.—At the Sonora-Bridgeport State highway bridge at Strawberry, in the Stanislaus National Forest, in the SE. ¼ sec. 17, T. 4 N., R. 18 E., 1½ miles below mouth of Herring Creek and 15 miles northeast of Confidence.

Records available.—October 20 to December 31, 1911.

Drainage area.—About 54 square miles.

Gage.—Vertical staff on left bank at bridge.

Channel.—Gravel and bowlders.

Discharge measurements.—Made from bridge at gage and by wading.

Winter flow.—Probably affected by ice.

Diversions and storage.—Three storage reservoirs have been constructed above the station to supply Tuolumne and Sonora with water for domestic use. This water is diverted about 10 miles below the station. Flow is partially regulated by storage.

Cooperation.—Discharge measurements furnished by United States Forest Service.

The following discharge measurement was made by H. J. Tompkins by wading 20 feet below the gage:

October 20, 1911: Gage height, 1.35 feet; discharge, 8.7 second-feet.

Daily gage height, in feet, of South Fork of Stanislaus River near Confidence, Cal., for 1911.

[Charles Count, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	1.65	1.2	11	.....	1.48	1.2	21	1.80	1.30	1.2
2	.....	1.70	1.2	12	.....	1.45	1.2	22	1.78	1.30	1.2
3	.....	1.60	1.2	13	.....	1.48	1.2	23	1.72	1.25	1.2
4	.....	1.62	1.2	14	.....	1.50	1.2	24	1.70	1.25	1.2
5	.....	1.60	1.2	15	.....	1.60	1.2	25	1.70	1.25	1.2
6	.....	1.52	1.22	16	.....	1.35	1.2	26	1.70	1.25	1.2
7	.....	1.52	1.2	17	.....	1.45	1.2	27	1.68	1.22	1.2
8	.....	1.50	1.2	18	.....	1.30	1.2	28	1.62	1.2	1.2
9	.....	1.50	1.2	19	.....	1.35	1.2	29	1.62	1.2	1.2
10	.....	1.50	1.2	20	.....	1.30	1.2	30	1.60	1.2	1.2
								31	1.62	.....	1.2

SOUTH FORK OF STANISLAUS RIVER NEAR COLUMBIA, CAL.

Location.—At highway bridge at Italian Bar, in the Stanislaus National Forest, in the SE. ¼ sec. 33, T. 3 N., R. 15 E., about 5 miles northeast of Columbia. Deer Creek enters about 4½ miles above and Fivemile Creek 1½ miles below the station.

Records available.—September 6, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to middle pier of bridge.

Channel.—Solid rock, bowlders, and gravel.

Discharge measurements.—Made from bridge when not possible to wade. No measurements were made during 1911.

Diversions.—About 11 miles above the station water is diverted for domestic use at Sonora and Tuolumne. Flow is partially regulated by storage.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Estimates are withheld until additional measurements are available.

Daily gage height, in feet, of South Fork of Stanislaus River near Columbia, Cal., for 1911.

[Oliver P. Brownlow, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		5.50		3.50		3.80						
2	0.65	3.60		4.10	2.80							
3					2.40			1.28			0.65	
4					3.10			1.18				
5						4.10		1.00			.55	
6							4.20	.90				
7	.65	2.50			2.70							
8								1.28				
9			5.50			3.90						
10	1.10	2.00		3.30		4.20						
11		2.10		2.80			3.68					
12								.82	0.55			
13					3.10							
14		1.90				4.80			.55			
15			2.70					.55				
16	1.20											
17		1.65	3.40	2.70		5.00					.60	
18			2.40									
19				3.40								
20		1.65			3.05	5.20						
21												0.55
22			2.40							0.55		
23				3.05	4.30						.55	
24			2.40			4.80						.50
25								.50				
26				2.80								
27					3.40			.50			.55	
28					4.00		1.82					
29			2.80		3.60	4.30						.57
30			3.40						.55			
31	[a]7.25		3.50		4.00							

[a] Estimated.

CALAVERAS RIVER AT JENNY LIND, CAL.

Location.—At highway bridge on Milton road, in the SE. ¼ sec. 22, T. 3 N., R. 10 E., about one-fourth mile southeast of Jenny Lind and 27 miles above junction with San Joaquin River. North and South forks unite about 15 miles above the station.

Records available.—January 1 to June 30, 1907; December 1, 1907, to June 30, 1908; and November 1, 1908, to December 31, 1911.

Drainage area.—395 square miles.

Gage.—Vertical staff in two sections.

Channel.—Gravel and small bowlders and shifts considerably at high stages.

Discharge measurements.—Made from bridge at gage and by wading.

Accuracy.—Results for 1911 are only fair on account of change in channel during high water.

Cooperation.—Gage-height record during the high-water season, December to June, is furnished by the United States Weather Bureau through N. R. Taylor, local forecaster.

Discharge measurements of Calaveras River at Jenny Lind, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 13	J. E. Stewart	6.15	10,600
14	....do	3.70	3,420
Feb. 23	....do	1.24	467
Mar. 8	....do	8.40	29,000
8	....do	8.75	32,400
May 18[a]	....do	.44	205
July 28[b]	....do	−.30	19
Dec. 1[c]	F. C. Ebert	−.13	43
1[c]	Lasley Lee	−.13	43

[a] Measurement made by wading 500 feet below gage.
[b] Measurement made by wading one-fourth mile above gage.
[c] Measurement made from foot-log 30 feet above gage.

Daily gage height, in feet, of Calaveras River at Jenny Lind, Cal., for 1911.

[Paul F. Sinclair, observer.]

Day	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.0	5.0	2.0	1.0	0.7	0.3	0.0	−0.3	−0.45	−0.2	−0.1	0.0
2	.0	3.2	2.7	1.0	.7	.3	.0	−.35	−.45	−.2	−.1	.0
3	.0	2.8	2.1	1.0	.6	.3	.0	−.35	−.45	−.2	−.1	.0
4	.0	2.6	4.65	1.0	.6	.2	.0	−.35	−.45	−.2	−.1	.0
5	.0	2.6	4.2	1.3	.6	.2	.0	−.35	−.45	−.2	−.1	.0
6	.0	2.4	3.4	2.5	.7	.2	−.1	−.4	−.45	−.2	−.1	.0
7	.0	2.0	8.65	2.1	.6	.2	−.1	−.4	−.45	−.2	−.1	.0
8	.0	1.8	7.5	1.3	.6	.2	−.1	−.4	−.45	−.2	−.1	.0
9	.0	1.6	5.0	1.3	.6	.2	−.1	−.4	−.45	−.2	−.1	.0
10	.3	1.5	4.0	2.0	.6	.2	−.15	−.4	−.45	−.2	.0	.0
11	.8	2.5	3.0	1.7	.6	.2	−.15	−.4	−.45	−.2	.0	.0
12	4.0	2.3	2.5	1.3	.5	.1	−.15	−.4	−.45	−.2	.0	.0
13	6.0	3.0	2.1	1.2	.5	.1	−.15	−.4	−.45	−.2	.0	.0
14	4.0	3.1	1.9	1.0	.5	.1	−.15	−.4	−.45	−.2	.0	.0
15	3.5	2.5	1.8	1.0	.4	.1	−.15	−.45	−.45	−.15	.0	.0
16	1.4	2.0	1.5	1.0	.4	.1	−.15	−.45	−.45	−.15	.0	.0
17	0.8	1.8	1.4	1.0	.4	.1	−.15	−.45	−.4	−.15	.0	+.1
18	.7	1.7	1.4	1.0	.4	.1	−.2	−.45	−.4	−.15	.0	.1
19	2.6	1.5	1.4	1.0	.4	.1	−.2	−.45	−.4	−.15	.0	.1
20	3.6	1.4	1.4	.9	.4	.0	−.2	−.45	−.4	−.1	.0	.1
21	3.6	1.3	1.4	.9	.4	.0	−.2	−.45	−.3	−.1	.0	.1
22	2.6	1.3	1.3	.9	.3	.0	−.25	−.45	−.3	−.1	.0	.1
23	1.6	1.3	1.2	.9	.3	.0	−.25	−.45	−.3	−.1	.0	.1
24	5.0	1.3	1.2	.8	.3	.0	−.3	−.45	−.25	−.1	.0	.1
25	6.0	1.2	1.2	.8	.3	.0	−.3	−.45	−.2	−.1	.0	.1
26	3.5	1.1	1.1	.8	.3	.0	−.3	−.45	−.2	−.1	.0	.1
27	3.3	1.2	1.1	.8	.3	.0	−.3	−.45	−.2	−.1	.0	.1
28	2.5	1.3	1.0	.8	.3	.0	−.3	−.45	−.2	−.1	.0	.1
29	2.8	.....	1.0	.8	.3	.0	−.3	−.45	−.2	−.1	.0	.1
30	10.0	.....	1.0	.7	.3	.0	−.3	−.45	−.2	−.1	.0	.2
31	14.0	.....	1.0	.....	.3	.....	−.3	−.45	.....	−.1	.....	.2

Daily discharge, in second-feet, of Calaveras River at Jenny Lind, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	51	7,930	1,130	470	305	142	64	21	10	32	46	64
2	51	2,860	2,020	470	305	142	64	17	10	32	46	64
3	51	2,170	1,240	470	258	142	64	17	10	32	46	64
4	51	1,870	6,640	470	258	112	64	17	10	32	46	64
5	51	1,870	5,210	665	258	112	64	17	10	32	46	64
6	51	1,600	3,250	1,980	305	112	46	13	10	32	46	64
7	51	1,130	31,200	1,450	258	112	46	13	10	32	46	64
8	51	935	22,500	665	258	112	46	13	10	32	46	64
9	51	750	8,360	665	258	112	46	13	10	32	46	64
10	110	665	5,040	1,330	258	112	39	13	10	32	64	64
11	246	1,730	2,800	1,020	258	112	39	13	10	32	64	64
12	4,040	1,470	1,980	665	215	86	39	13	10	32	64	64
13	10,000	2,500	1,450	595	215	86	39	13	10	32	64	64
14	4,040	2,680	1,220	470	215	86	39	13	10	32	64	64
15	3,040	1,730	1,120	470	176	86	39	10	10	39	64	64
16	557	1,130	830	470	176	86	39	10	10	39	64	64
17	246	935	745	470	176	86	39	10	13	39	64	86
18	214	840	745	470	176	86	32	10	13	39	64	86
19	1,670	665	745	470	176	86	32	10	13	39	64	86
20	3,230	585	745	411	176	64	32	10	13	46	64	86
21	3,230	510	745	411	176	64	32	10	21	46	64	86
22	1,670	510	665	411	142	64	26	10	21	46	64	86
23	700	510	595	411	142	64	26	10	21	46	64	86
24	6,630	510	595	356	142	64	21	10	26	46	64	86
25	10,000	440	595	356	142	64	21	10	32	46	64	86
26	3,040	370	530	356	142	64	21	10	32	46	64	86
27	2,690	440	530	356	142	64	21	10	32	46	64	86
28	1,550	510	470	356	142	64	21	10	32	46	64	86
29	1,930	.....	470	356	142	64	21	10	32	46	64	86
30	34,100	.....	470	305	142	64	21	10	32	46	64	112
31	69,600	.....	470	.....	142	.....	21	10	.....	46	.....	112

NOTE.—Daily discharge determined from three rating curves applicable Jan. 1, 1910, to Jan. 31, 1911, Feb. 1 to Mar. 6, and Mar. 7 to Dec. 31. These curves are fairly defined at low stages, but at medium and high stages they are poor.

Monthly discharge of Calaveras River at Jenny Lind, Cal., for 1911.

[Drainage area, 395 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	69,600	51	5,260	13.3	15.33	323,000	C.
February	7,930	370	1,420	3.59	3.74	78,900	B.
March	31,200	470	3,390	8.58	9.89	208,000	C.
April	1,980	305	594	1.50	1.67	35,300	C.
May	305	142	202	.511	.59	12,400	B.
June	142	64	90.5	.229	.26	5,390	B.
July	64	21	37.5	.095	.11	2,310	C.
August	21	10	12.1	.031	.04	744	C.
September	32	10	16.4	.042	.05	976	C.
October	46	32	38.5	.098	.11	2,370	C.
November	64	46	58.6	.148	.17	3,490	C.
December	112	64	76.3	.193	.22	4,690	C.
The year	69,600	10	937	2.37	32.18	678,000	

MOKELUMNE RIVER NEAR CLEMENTS, CAL.

Location.—At highway bridge in the NW. ¼ sec. 15, T. 4 N., R. 8 E., about 1 mile north of Clements. The North and Middle forks of the Mokelumne unite about 35 miles above Clements. Cosumnes River enters about 19½ miles below the station.

Records available.—October 28, 1904, to December 31, 1911.

Drainage area.—642 square miles.

Gage.—Painted on middle bridge pier with inclined section for low water on the right bank.

Channel.—Sand and gravel which shift but little.

Discharge measurements.—Made from bridge at gage or by wading.

Diversions.—Several small diversions for mining and local irrigation above the station. Power is developed on the North Fork and part of the water is not returned to the stream. Flow is partly regulated by storage.

Accuracy.—Results are good.

Discharge measurements of Mokelumne River near Clements, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 15	J. E. Stewart	7.56	2,290
Feb. 22	.....do	5.65	1,030
Mar. 7	.....do	13.00	9,120
May 17	.....do	7.90	2,730
July 29	.....do	4.54	476
Sept. 20	.....do	3.84	245

Daily gage height, in feet, of Mokelumne River near Clements, Cal., for 1911.

[Reba Gaskill, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.05	12.8	6.25	9.4	8.35	9.4	10.2	4.45	3.55	3.95	3.25	3.5
2	3.9	10.0	6.8	9.7	8.35	9.9	8.7	4.35	3.4	4.05	3.5	3.35
3	3.85	9.1	7.7	10.4	8.25	10.05	8.85	4.35	3.4	3.65	3.35	3.45
4	3.95	8.75	8.15	10.25	9.6	10.3	8.6	4.35	3.3	3.55	3.5	3.3
5	4.05	8.6	8.0	10.6	10.2	11.7	8.15	4.3	3.45	3.5	3.3	3.35
6	4.15	8.25	7.9	11.4	9.7	12.2	8.3	4.4	3.4	3.55	3.6	3.25
7	4.05	8.5	11.75	10.65	9.3	10.9	8.2	.....	3.5	3.4	3.6	3.2
8	3.95	7.9	11.45	10.7	9.25	10.15	7.85	.....	3.6	3.6	3.5	3.3
9	3.8	7.8	10.5	10.25	9.35	10.5	7.6	.....	3.5	3.35	3.65	3.35
10	4.7	7.6	9.7	9.65	9.5	11.55	7.45	.....	3.35	3.15	3.4	3.35
11	5.1	7.4	8.45	9.5	9.45	11.95	7.45	3.95	3.5	3.35	4.3	3.3
12	6.55	7.15	8.05	8.8	9.35	12.25	7.25	3.8	3.45	3.35	4.2	3.45
13	8.85	7.35	7.9	9.0	.....	11.5	7.35	3.85	3.35	3.25	3.95	3.25
14	8.0	7.65	7.4	9.35	9.05	11.2	7.5	3.75	3.3	3.3	3.8	3.3
15	8.9	7.55	7.35	8.75	9.15	10.95	.....	3.85	3.4	3.25	.....	3.5
16	5.6	7.35	7.8	8.5	8.5	11.45	7.4	3.8	3.25	3.25	.....	3.45
17	5.0	7.1	8.25	8.45	7.9	11.75	7.3	3.7	3.25	3.4	3.65	3.6
18	4.75	6.4	8.25	8.05	8.1	12.3	6.7	3.75	3.4	3.55	3.7	3.55
19	5.0	6.0	8.55	8.6	8.1	11.15	6.1	3.7	3.5	3.3	3.8	3.35
20	7.0	5.8	8.3	8.25	8.7	10.75	5.7	3.8	3.65	3.1	3.6	3.35
21	6.75	6.3	8.0	8.6	9.5	10.8	5.35	3.7	3.6	3.1	3.65	3.25
22	6.0	6.7	7.75	8.9	10.45	10.15	5.3	3.7	3.7	3.0	3.75	3.2
23	5.95	7.25	7.6	9.25	11.85	9.55	5.2	3.6	3.45	3.35	3.8	3.2
24	8.55	7.05	7.95	9.7	11.95	8.95	.....	3.75	3.65	3.3	3.9	3.35
25	10.35	6.7	8.15	10.35	11.1	8.3	.....	3.65	3.5	3.35	3.75	3.35
26	8.9	6.65	8.35	9.9	10.05	8.6	.....	3.7	3.45	3.6	3.65	3.25
27	7.05	6.2	8.6	9.75	9.7	8.75	.....	3.7	3.65	3.2	3.6	3.25
28	6.6	5.9	8.8	9.1	9.5	8.8	.....	3.75	3.45	3.35	3.65	3.35
29	8.55	.....	8.95	8.6	9.35	8.6	4.5	3.65	3.65	3.55	3.55	3.4
30	17.45	.....	9.2	8.35	8.85	8.9	4.5	3.45	3.65	3.4	3.45	3.7
31	17.4	.....	.....	.....	8.55	.....	4.5	3.45	.....	3.2	.....	3.8

NOTE.—Gage heights Jan. 10–15, 19–21, Jan. 23 to Feb. 2, and Mar. 6–7 determined by means of graph.

Daily discharge, in second-feet, of Mokelumne River near Clements, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	217	8,800	1,430	4,240	3,150	4,240	5,160	445	170	275	112	160
2	181	4,920	1,820	4,570	3,150	4,800	3,500	408	140	305	160	130
3	170	3,910	2,550	5,400	3,050	4,980	3,650	408	140	192	130	150
4	192	3,550	2,960	5,220	4,460	5,280	3,400	408	120	170	160	120
5	217	3,400	2,820	5,660	5,160	7,140	2,960	390	150	160	120	130
6	244	3,050	2,730	6,720	4,570	7,880	3,100	425	140	170	180	112
7	217	3,300	7,210	5,720	4,130	6,050	3,000	395	160	140	180	105
8	192	2,730	6,790	5,790	4,080	5,100	2,680	365	180	180	160	120
9	159	2,640	5,530	5,220	4,180	5,530	2,460	335	160	130	192	130
10	433	2,460	4,570	4,520	4,350	6,930	2,330	305	130	98	140	130
11	610	2,290	3,250	4,350	4,300	7,500	2,330	275	160	130	390	120
12	1,520	2,090	2,860	3,600	4,180	7,960	2,170	230	150	130	355	150
13	3,500	2,250	2,730	3,800	4,020	6,860	2,250	245	130	112	275	112
14	2,680	2,500	2,290	4,190	3,860	6,440	2,370	218	120	120	230	120
15	3,560	2,420	2,250	3,550	3,960	6,120	2,330	245	140	112	217	160
16	890	2,250	2,640	3,300	3,300	6,790	2,290	230	112	112	205	150
17	565	2,050	3,050	3,250	2,730	7,210	2,210	205	112	140	192	180
18	454	1,520	3,050	2,860	2,910	8,030	1,740	218	140	170	205	170
19	565	1,250	3,350	3,400	2,910	6,380	1,320	205	160	120	230	130
20	1,860	1,120	3,100	3,050	3,500	5,860	1,060	230	192	90	180	130
21	1,660	1,460	2,820	3,400	4,350	5,920	858	205	180	90	192	112
22	1,130	1,740	2,600	3,700	5,460	5,100	830	205	205	75	218	105
23	1,100	2,170	2,460	4,080	7,360	4,400	780	180	150	130	230	105
24	3,200	2,010	2,780	4,570	7,500	3,750	717	218	192	120	260	130
25	5,240	1,740	2,960	5,340	6,310	3,100	654	192	160	130	218	130
26	3,560	1,710	3,150	4,800	4,980	3,400	591	205	150	180	192	112
27	1,900	1,380	3,400	4,620	4,570	3,550	528	205	192	105	180	112
28	1,550	1,180	3,600	3,910	4,350	3,600	465	218	150	130	192	130
29	3,200	.....	3,750	3,400	4,180	3,400	465	192	192	170	170	140
30	16,700	.....	4,020	3,150	3,650	3,700	465	150	192	140	150	205
31	16,600	.....	4,130	.....	3,350	.....	465	150	.....	105	.....	230

NOTE.—Daily discharge determined from two well-defined rating curves applicable Jan. 1 to 31 and Feb. 1 to Dec. 31. Discharge interpolated for days on which gage was not read.

Monthly discharge of Mokelumne River near Clements, Cal., for 1911.

[Drainage area, 642 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	16,700	159	2,400	3.74	4.31	148,000
February	8,800	1,120	2,570	4.00	4.16	143,000
March	7,210	1,430	3,310	5.16	5.95	204,000
April	6,720	2,860	4,310	6.71	7.49	256,000
May	7,500	2,730	4,260	6.64	7.66	262,000
June	8,030	3,100	5,570	8.68	9.68	331,000
July	5,160	465	1,910	2.98	3.44	117,000
August	445	150	268	.417	.48	16,500
September	205	112	156	.243	.27	9,280
October	305	75	143	.223	.26	8,790
November	390	112	200	.312	.35	11,900
December	230	105	136	.212	.24	8,360
The year	16,700	75	2,090	3.26	44.29	1,520,000

NOTE.—Accuracy for the year A, except as affected by somewhat poor gage readings.

MIDDLE FORK OF MOKELUMNE RIVER NEAR WEST POINT, CAL.

Location.—Above highway bridge, in sec. 10, T. 6 N., R. 13 E., 3½ miles above junction with the South Fork, 1¼ miles below mouth of Bear Creek and 1 mile south of Westpoint.

Records available.—October 9 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in two sections fastened to trees on right bank, 1,000 feet above bridge.

Channel.—Bowlders and gravel.

Discharge measurements.—Made from car and cable one-half mile above gage and by wading.

Diversions.—Mokelumne Hill and Valley Springs ditch (capacity, about 6 second-feet) diverts about 2 miles above the station.

Discharge measurements of Middle Fork of Mokelumne River near West Point, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 9[a]	F. C. Ebert	3.10	16
Nov. 24[b]	do	3.00	12

[a] Made by wading 150 feet above gage. [b] Made by wading ½ mile above gage.

Daily gage height, in feet, of Middle Fork of Mokelumne River near West Point, Cal., for 1911.

[Clarence Sorensen, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	2.99	2.95	11	3.04	3.06	2.99	21	2.93	3.00	3.10
2	.....	2.99	2.95	12	3.04	3.04	2.99	22	2.95	3.00	3.10
3	.....	2.92	2.95	13	3.00	3.03	3.00	23	3.01	3.00	3.10
4	.....	2.95	2.95	14	3.00	3.01	3.00	24	.....	3.00	3.07
5	.....	2.93	2.95	15	3.00	3.01	3.00	25	.....	2.99	3.34
6	.....	2.92	3.00	16	2.99	3.01	3.00	26	.....	3.00	3.34
7	.....	2.94	3.00	17	2.99	3.01	3.06	27	.....	2.95	3.28
8	.....	2.95	2.98	18	2.99	3.01	3.01	28	.....	2.95	3.28
9	3.10	3.60	2.98	19	2.98	3.00	3.01	29	.....	2.95	3.28
10	3.08	3.12	2.99	20	2.95	3.00	3.10	30	3.00	2.95	3.28
								31	2.99	.....	3.30

SOUTH FORK OF MOKELUMNE RIVER NEAR RAILROAD FLAT, CAL.

Location.—At Laidet ranch, in sec. 34, T. 6 N., R. 14 E., about 5 miles above mouth of Licking Fork and 5 miles east of Railroad Flat.

Records available.—October 23 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to alder tree on right bank 100 feet above suspension footbridge.

Channel.—Gravel.

Discharge measurements.—Made from car and cable 150 feet below gage or by wading.

Diversions.—An irrigation and power ditch, having a capacity of about 2 second-feet, diverts at base of Blue Mountain, above the station. Some water is also used for irrigation at Laidet ranch.

Cooperation.—Gage-height record furnished by United States Forest Service.

Discharge measurements of South Fork of Mokelumne River near Railroad Flat, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 23[a]	H. J. Tompkins	1.18	7.6
Nov. 28[b]	Lasley Lee	1.19	7.4

[a] Made by wading 200 feet above gage. [b] Made by wading 200 feet below gage.

Daily gage height, in feet, of South Fork of Mokelumne River near Railroad Flat, Cal., for 1911.

[J. E. Elliott, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1				11				21			
2				12		1.20		22			
3		1.20	1.18	13				23	1.18	1.18	
4				14		1.20		24			
5				15			1.18	25			
6				16				26		1.18	
7			1.18	17				27			
8				18		1.10		28		1.19	
9				19				29			1.20
10		1.55	1.18	20				30		1.18	
								31			

LICKING FORK OF MOKELUMNE RIVER NEAR RAILROAD FLAT, CAL.

Location.—At Mokelumne Forest ranger station, in the E. ½ SE. ¼ sec. 26, T. 6 N., R. 14 E., 100 feet above mouth of Big Canyon Creek and 6½ miles east of Railroad Flat. Licking Fork joins the South Fork 6 miles below the station.

Records available.—October 23 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on left bank 300 feet above the ranger station.

Channel.—Bowlders and gravel.

Discharge measurements.—Made from footlog near gage or by wading.

Diversions.—An irrigation ditch, having a capacity of 1 second-foot, heads above the station.

Cooperation.—Gage-height record furnished by United States Forest Service.

Discharge measurements of Licking Fork of Mokelumne River at Railroad Flat, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 23[a]	H. J. Tompkins	0.50	1.6
Nov. 29[b]	Lasley Lee	.55	1.7

[a] Made by wading 10 feet below gage. [b] Made by wading 200 feet above gage.

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Daily gage height, in feet, of Licking Fork of Mokelumne River near Railroad Flat, Cal., for 1911.

[J. E. Elliott, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	.....	0.57	11	.....	0.60	0.57	21	.....	0.55	.....
2	.....	.....	.57	12	.....	.56	.57	22	.....	.55	.....
3	.....	0.50	.57	13	.....	.....	.57	23	0.50	.55	.....
4	.....	.52	.57	14	.....	.....	.57	24	.50	.55	.....
5	.....	.52	.57	15	.....	.57	.....	25	.49	.55	.....
6	.....	.52	.57	16	.....	.60	.....	26	.....	.55	.....
7	.....	.52	.57	17	.....	.58	.....	27	.....	.57	.....
8	.....	.52	.57	18	.....	.56	.....	28	.....	.57	.....
9	.....	.53	.57	19	.....	.....	.....	29	.....	.57	.....
10	.....	.80	.57	20	.....	.55	.....	30	.....	.57	0.60
								31	.....	.....	.60

DRY CREEK NEAR IONE, CAL.

Location.—At private highway bridge at Landis ranch, in southwestern part of Arroyo Seco grant, 2½ miles below mouth of Jackson Creek and 7 miles southwest of Ione.

Records available.—October 7 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in two sections. Lower section is fastened to bridge pier near right bank and upper section to a tree 300 feet to the right of bridge.

Channel.—Sand, and will shift during high water.

Discharge measurements.—Made from bridge or by wading.

Diversions.—Small diversions for local irrigation and mining above the station. There is a small diversion from the North Fork of Mokelumne River into this drainage basin.

The following discharge was estimated by F. C. Ebert:
October 7, 1911: Gage height, 1.67 feet; discharge, 0.2 second-foot.

Daily gage height, in feet, of Dry Creek near Ione, Cal., for 1911.

[Chas. W. Landis, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	2.0	2.0	11	1.8	2.7	2.0	21	1.8	2.1	2.1
2	.....	1.9	2.0	12	1.8	2.2	2.0	22	1.7	2.1	2.0
3	.....	1.9	2.0	13	1.8	2.3	2.0	23	1.7	2.0	2.0
4	.....	1.9	2.0	14	1.8	2.1	2.0	24	1.8	2.0	2.0
5	.....	1.9	2.0	15	1.8	2.0	2.0	25	1.8	2.0	2.0
6	.....	1.8	2.0	16	1.8	2.0	2.0	26	1.8	2.0	2.0
7	1.5	1.8	2.0	17	1.8	2.0	2.2	27	1.8	2.0	2.0
8	1.7	1.9	2.0	18	1.8	2.0	2.2	28	1.8	2.0	2.6
9	1.6	1.9	2.0	19	1.8	2.1	2.1	29	1.9	2.0	2.4
10	1.8	2.5	2.0	20	1.8	2.1	2.1	30	2.6	2.0	2.2
								31	1.9	.....	2.2

NOTE.—Creek dry July 11 to Oct. 6.

COSUMNES RIVER AT MICHIGAN BAR, CAL.

Location.—At highway bridge at Michigan Bar, in the NW. ¼ SE. ¼ sec. 36, T. 8 N., R. 8 E., 5½ miles southwest of Latrobe. The North and Middle forks unite 12 miles above the station.

Records available.—October 20, 1907, to December 31, 1911.

Drainage area.—524 square miles.

Gage.—Vertical staff on downstream end of bridge pier, near left bank.

Channel.—Sand, gravel, and small bowlders which shift somewhat.

Discharge measurements.—Made from bridge at gage and by wading.

Diversions.—A few small ditches take water for use in irrigation and mining.

Accuracy.—Conditions are favorable for making good discharge measurements at all stages. Results are good.

Discharge measurements of Cosumnes River at Michigan Bar, Cal., in 1911.

Date.	Hydrographer.	Gage. height.	Dis- charge.
		Feet.	*Sec.-ft.*
Jan. 14	H. D. McGlashan	7.65	8,740
Feb. 1	do	7.95	9,830
Mar. 31	J. E. Stewart	5.50	2,570
Aug. 10[a]	F. C. Ebert	2.55	39
Oct. 2[b]	J. E. Stewart	2.55	40

[a] Measurement made by wading 300 feet above gage.
[b] Measurement made by mading 150 feet above gage.

Daily gage height, in feet, of Cosumnes River at Michigan Bar, Cal., for 1911.

[C. B. Ruman, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.00	7.80	4.50	5.60	4.80	4.50	3.62	2.70	2.30	2.50	2.60	2.70
2	2.95	6.60	4.65	5.75	4.80	4.45	3.60	2.62	2.30	2.58	2.60	2.70
3	2.97	6.05	5.15	5.78	4.80	4.50	3.60	2.60	2.30	2.70	2.60	2.70
4	3.00	6.00	6.35	5.70	4.85	4.55	3.60	2.60	2.30	2.70	2.60	2.70
5	3.00	5.70	6.30	6.10	5.08	4.50	3.50	2.60	2.32	2.70	2.60	2.72
6	3.00	5.65	6.20	6.60	4.95	4.50	3.50	2.60	2.35	2.75	2.60	2.80
7	3.00	5.30	9.05	6.10	4.90	4.58	3.50	2.60	2.35	2.70	2.60	2.80
8	3.00	5.05	7.80	5.85	4.80	4.58	3.40	2.60	2.38	2.68	2.60	2.85
9	3.32	4.95	6.95	5.88	4.75	4.50	3.40	2.60	2.35	2.62	2.60	2.80
10	4.30	4.82	6.65	6.00	4.72	4.42	3.30	2.55	2.35	2.70	2.70	2.80
11	3.95	5.75	6.10	5 55	4.70	4.50	3.28	2.54	2.35	2.70	3.32	2.80
12	7.60	5.05	5.80	5.42	4.75	4.50	3.30	2.50	2.35	2.62	3.00	2.75
13	7.70	5.75	5.50	5.20	4.72	4.42	3.25	2.50	2.40	2.60	2.85	2.75
14	7.75	5.35	5.45	5.05	4.70	4.38	3.20	2.50	2.40	2.60	2.80	2.75
15	6.05	5.05	5.25	5.00	4.68	4.30	3.15	2.50	2.45	2.60	2.80	2.78
16	4.70	4.85	5.20	5.00	4.60	4.30	3.10	2.50	2.40	2.60	2.80	2.80
17	4.30	4.75	5.10	5.00	4.60	4.30	3.10	2.50	2.35	2.58	2.95	2.80
18	4.10	4.65	5.10	5.00	4.52	4.28	3.05	2.50	2.35	2.50	2.89	2.90
19	4.35	4.60	5.10	5.08	4.50	4.25	3.00	2.45	2.35	2.50	2.80	2.80
20	6.70	4.55	5.15	5.08	4.50	4.22	3.00	2.42	2.35	2.50	2.80	2.80
21	6.20	4.45	5.20	5.08	4.50	4.10	2.92	2.40	2.35	2.50	2.80	2.80
22	5.05	4.40	5.20	5.12	4.60	4.02	2.90	2.40	2.35	2.50	2.80	2.72
23	4.70	4.40	5.25	5.20	4.72	3.95	2.90	2.40	2.35	2.50	2.79	2.80
24	7.55	4.35	5.25	5.20	4.80	3.88	2.90	2.36	2.35	2.50	2.75	2.85
25	7.55	4.30	5.25	5.35	4.65	3.82	2.88	2.35	2.40	2.50	2.70	2.80
26	6.70	4.28	5.25	5.38	4.60	3.80	2.80	2.35	2.50	2.50	2.74	2.70
27	5.65	4.30	5.25	5.28	4.50	3.80	2.80	2.35	2.50	2.50	2.80	2.70
28	5.70	4.30	5.28	5.10	4.50	3.80	2.75	2.35	2.50	2.55	2.70	3.00
29	7.95	.....	5.28	4.95	4.50	3.72	2.72	2.35	2.50	2.65	2.70	3.00
30	10.50	.....	5.42	4.80	4.50	3.68	2.70	2.35	2.50	2.60	2.70	2.90
31	10.90	.....	5.52	.....	4.52	.....	2.70	2.32	.....	2.60	.....	2.99

Daily discharge, in second-feet, of Cosumnes River at Michigan Bar, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	63	9,280	1,050	2,760	1,410	1,050	310	53	24	35	43	53
2	54	5,320	1,220	3,100	1,410	995	300	45	24	41	43	53
3	58	3,820	1,940	3,160	1,410	1,050	300	43	24	53	43	53
4	63	3,700	4,610	2,980	1,480	1,100	300	43	24	53	43	53
5	63	2,980	4,470	3,950	1,830	1,050	255	43	25	53	43	56
6	63	2,870	4,210	5,320	1,620	1,050	255	43	26	60	43	66
7	63	2,190	14,100	3,950	1,550	1,140	255	43	26	53	43	66
8	63	1,780	9,280	3,330	1,410	1,140	215	43	28	51	43	74
9	136	1,620	6,390	3,400	1,340	1,050	215	43	26	45	43	66
10	770	1,440	5,470	3,700	1,310	962	180	39	26	53	53	66
11	466	3.100	3,950	2,660	1,280	1,050	174	38	26	53	187	66
12	8,560	1,780	3,210	2,410	1,340	1,050	180	35	26	45	180	60
13	8,920	3,100	2,560	2,020	1,310	962	165	35	29	43	74	60
14	9,100	2,280	2,460	1,780	1,280	920	150	35	29	43	66	60
15	3,820	1,780	2,100	1,700	1,260	840	136	35	32	43	66	63
16	1,250	1,480	2,020	1,700	1,160	840	123	35	29	43	66	66
17	770	1,340	1,860	1,700	1,160	840	123	35	26	41	92	66
18	588	1,220	1,860	1,700	1,070	820	112	35	26	35	80	82
19	820	1,160	1,860	1,830	1,050	790	101	32	26	35	66	66
20	5,620	1,100	1,940	1,830	1,050	760	101	30	26	35	66	66
21	4,210	995	2,020	1,830	1,050	650	86	29	26	35	66	66
22	1,780	940	2,020	1,890	1,160	578	82	29	26	35	66	56
23	1,250	940	2,100	2,020	1,310	520	82	29	26	35	65	66
24	8,380	890	2,100	2,020	1,410	466	82	27	26	35	60	74
25	8,380	840	2,100	2,280	1,220	424	79	26	29	35	53	66
26	5,620	820	2,100	2,330	1,160	410	66	26	35	35	58	53
27	2,870	840	2,100	2,160	1,050	410	66	26	35	35	66	53
28	2,980	840	2,160	1,860	1,050	410	60	26	35	39	53	101
29	9,820	.....	2,160	1,620	1,050	362	56	26	35	48	53	101
30	20,600	.....	2,410	1,410	1,050	340	53	26	35	43	53	82
31	22,400	.....	2,600	.....	1,070	.....	53	25	.....	43	.....	99

NOTE.—Daily discharge determined from two fairly well-defined rating curves applicable Jan. 1, 1910, to Jan. 31, 1911, and Feb. 1 to Dec. 31, 1911.

Monthly discharge of Cosumnes River at Michigan Bar, Cal., for 1911.

[Drainage area, 524 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	22,400	54	4,180	7.98	9.20	257,000	A.
February	9,280	820	2,160	4.12	4.29	120,000	A.
March	14,100	1,050	3,240	6.18	7.12	199,000	A.
April	5,320	1,410	2,480	4.73	5.28	148,000	A.
May	1,830	1,050	1,270	2.42	2.79	78,100	B.
June	1,140	340	801	1.53	1.71	47,700	B.
July	310	53	152	.290	.33	9,350	B.
August	53	25	34.8	.066	.08	2,140	B.
September	35	24	27.9	.053	.06	1,660	C.
October	60	35	42.9	.082	.09	2,640	B.
November	187	43	65.9	.126	.14	3,920	B.
December	101	53	67.0	.128	.15	4,120	B.
The year	22,400	24	1,210	2.31	31.24	874,000	

NORTH FORK OF COSUMNES RIVER NEAR EL DORADO, CAL.

Location.—At suspension footbridge at Celio's ranch [1] in sec. 23, T. 9 N., R. 10 E., 5 miles south of El Dorado and 4 miles above junction with Middle Fork. Martinez Creek enters about 1½ miles above the station.
Records available.—August 13 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Staff in three sections on right bank at the bridge.
Channel.—Gravel and solid rock.
Discharge measurements.—Made from bridge or by wading.

Discharge measurements of North Fork of Cosumnes River near El Dorado, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 13[a]	F. C. Ebert	3.38	28
Sept. 23[b]	do	3.25	20

[a] Made by wading 500 feet below gage. [b] Made by wading 250 feet above gage.

Daily gage height, in feet, of North Fork of Cosumnes River near El Dorado, Cal., for 1911.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1		3.2	3.32			16	3.3	3.3		3.7	3.45
2				3.4	3.5	17			3.35		3.55
3		3.2	3.45		3.5	18				3.55	
4				3.4		19	3.3	3.2		3.55	3.5
5			3.5	3.4	3.5	20					
6		3.2				21	3.3			3.5	3.45
7			3.45	3.4	3.55	22	3.2	3.2	3.35		
8			3.4			23		3.25		3.45	3.5
9		3.2		3.45	3.5	24		3.25	3.4		3.5
10		3.2	3.45		3.45	25	3.2			3.45	
11				3.8		26				3.45	3.55
12		3.3		3.65	3.45	27	3.2		3.4		
13	3.4		3.4			28		3.3	3.5	3.5	3.7
14			3.4	3.5	3.45	29			3.5		
15			3.4			30	3.2	3.3			3.6
						31			3.45		3.6

SACRAMENTO RIVER BASIN.

SACRAMENTO RIVER AT CASTELLA, CAL.

Location.—At the private highway bridge at Castella, in sec. 22, T. 38 N., R. 4 W., about half a mile below the mouth of Castle Creek.
Records available.—October 15, 1910, to December 31, 1911.
Drainage area.—257 square miles.
Gage.—Vertical staff on downstream end of bridge pier near right bank.
Channel.—Small bowlders; fairly permanent.
Discharge measurements.—Made from upstream side of bridge in 1911.
Accuracy.—Although the channel is a little rough, it is believed that good results will be obtained at this station. Sufficient measurements have not yet been made to define the rating curve.
Cooperation.—Gage-height record furnished by H. O. Wickes.

[1] "Kings Store" on map of Placerville quadrangle published by United States Geological Survey.

Discharge measurements of Sacramento River at Castella, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 8	G. T. Peekema	5.22	2,370
May 27	do	4.38	1,490
Sept. 1	do	2.55	249

Daily gage height, in feet, of Sacramento River at Castella, Cal., for 1911.

[H. O. Wickes, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.7	4.4	3.0	6.0	4.6	4.6	3.1	2.8	2.5	2.6	2.6	2.6
2	2.7	4.4	3.0	6.0	4.5	4.6	3.1	2.7	2.5	2.6	2.6	2.6
3	2.7	4.1	3.0	5.9	4.8	4.6	3.0	2.7	2.5	2.6	2.6	2.6
4	2.7	4.0	3.5	5.4	4.9	4.6	3.0	2.7	2.5	2.6	2.6	2.6
5	2.7	3.9	4.2	6.2	5.8	4.5	3.0	2.7	2.5	2.6	2.6	2.8
6	2.7	3.8	6.5	5.3	4.9	4.5	3.0	2.7	2.5	2.6	2.6	2.7
7	2.7	3.7	5.5	5.2	4.8	4.4	3.0	2.7	2.5	2.6	2.6	2.6
8	2.7	3.5	5.5	5.2	4.8	4.3	3.0	2.6	2.5	2.6	2.6	2.6
9	2.8	3.4	4.4	5.6	4.5	4.2	3.0	2.6	2.5	2.8	2.6	2.6
10	2.7	3.5	4.1	4.9	4.5	4.2	3.0	2.6	2.5	2.7	2.7	2.6
11	2.6	3.6	4.0	4.9	4.4	4.3	3.0	2.5	2.5	2.6	2.6	2.6
12	2.5	3.6	3.9	4.7	4.4	4.3	3.0	2.5	2.6	2.6	2.6	2.6
13	2.5	3.5	3.9	4.4	4.4	4.3	3.0	2.5	2.5	2.6	2.6	2.6
14	2.5	3.4	4.0	4.3	4.4	4.2	2.9	2.5	2.5	2.6	2.6	2.6
15	2.6	3.3	4.0	4.3	4.4	4.1	2.9	2.5	2.5	2.6	2.8	2.6
16	2.6	3.2	4.1	4.2	4.6	4.0	2.9	2.5	2.5	2.6	2.6	2.6
17	2.6	3.1	4.2	4.2	4.4	4.0	2.9	2.5	2.5	2.6	2.6	2.5
18	3.1	3.1	4.3	4.4	4.9	3.9	3.0	2.5	2.5	2.6	2.6	2.5
19	4.45	3.1	4.4	4.4	4.5	3.8	3.0	2.5	2.5	2.6	2.6	2.5
20	3.8	3.1	4.5	4.5	4.5	3.8	2.9	2.5	2.5	2.6	2.6	2.5
21	3.2	3.1	4.6	4.5	4.4	3.8	2.9	2.5	2.5	2.6	2.6	2.5
22	3.0	3.1	4.9	4.8	4.8	3.5	2.9	2.5	2.5	2.6	2.6	2.5
23	3.0	3.1	5.1	4.9	5.1	3.5	2.8	2.5	2.5	2.6	2.6	2.5
24	3.0	3.1	4.9	5.3	5.0	3.4	2.8	2.5	2.5	2.6	2.6	2.5
25	3.0	3.1	4.9	5.7	4.5	3.3	2.8	2.5	2.6	2.6	2.6	2.5
26	3.0	3.0	4.8	5.3	4.5	3.3	2.8	2.5	2.6	2.6	2.6	2.5
27	3.1	3.0	4.6	5.0	4.4	3.3	2.8	2.5	2.6	2.6	2.6	2.5
28	3.2	3.0	4.6	4.8	4.4	3.2	2.8	2.5	2.5	2.6	2.6	2.5
29	3.5	.....	4.9	4.5	4.4	3.1	2.8	2.5	2.5	2.6	2.6	2.5
30	4.8	.....	5.2	4.5	4.4	3.1	2.8	2.5	2.5	2.6	2.6	2.5
31	4.6	.....	5.8	.....	4.6	.....	2.8	2.5	.....	2.6	.....	2.5

SACRAMENTO RIVER AT ANTLER, CAL.

Location.—At the highway bridge at Antler, 200 feet above the mouth of Gregory Creek, in the SE. ¼ sec. 13, T. 35 N., R. 5 W., and about 22 miles below the Castella station. Pit River, the principal tributary of the upper Sacramento, enters about 14 miles below Antler.

Records available.—November 19, 1910, to December 31, 1911. Station discontinued December 31, 1911.

Drainage area.—461 square miles.

Gage.—Vertical staff on downstream end of wooden pier at right end of highway bridge.

Channel.—Gravel and small bowlders, which shift slightly at high stages, but the control appears to be permanent.

Discharge measurements.—Made from bridge at the gage.

Accuracy.—Results at low and medium stages are considered good. The rating curve is not well defined for high water.

Cooperation.—Gage-height record furnished by C. H. Hamilton.

Discharge measurements of Sacramento River at Antler, Cal., in 1911–12.

Date.	Hydrographer.	Gage height.	Discharge.
1911.		*Feet.*	*Sec.-ft.*
Apr. 13	G. T. Peekama	6.64	4,630
May 26	.....do	4.71	2,080
Sept. 22	.....do	2.00	246
22	.....do	2.01	246
1912.			
Jan. 28	H. J. Tompkins	4.88	2,220

Daily gage height, in feet, of Sacramento River at Antler, Cal., for 1911.

[C. H. Hamilton, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.6	6.4	3.6	5.2	4.6	4.8	3.1	2.0	2.0	2.3	2.1	2.2
2	2.6	7.4	4.1	7.0	4.6	4.7	2.9	2.0	2.0	2.4	2.1	2.2
3	2.5	5.8	4.5	6.5	4.7	4.7	2.9	2.0	2.0	2.3	2.1	2.2
4	2.4	5.5	4.8	7.0	4.7	4.7	2.9	2.0	2.0	2.3	2.1	2.2
5	2.4	5.2	5.1	8.0	4.8	4.7	2.9	2.0	2.0	2.3	2.1	2.2
6	2.4	5.9	10.5	7.3	4.8	4.7	2.9	2.0	2.0	2.2	2.1	2.2
7	2.4	4.5	11.8	7.0	4.8	4.8	2.9	2.0	2.0	2.1	2.1	2.3
8	2.4	4.5	10.4	6.9	4.8	4.8	2.9	2.0	2.0	2.1	2.1	2.3
9	2.5	4.4	10.1	6.5	4.8	4.8	2.9	2.0	2.0	2.2	2.2	2.4
10	2.6	4.9	9.7	6.0	4.8	4.8	2.9	2.0	2.0	2.1	2.5	2.3
11	2.6	5.9	9.0	5.9	4.9	4.7	2.7	2.0	2.0	2.2	2.5	2.2
12	2.6	5.1	8.1	5.4	4.6	4.7	2.6	2.0	2.0	2.2	2.5	2.2
13	2.7	5.0	6.4	4.8	4.7	4.6	2.6	2.0	2.0	2.1	2.5	2.1
14	2.8	4.7	5.0	4.8	4.8	4.6	2.6	2.0	2.0	2.1	2.5	2.1
15	3.0	4.6	5.0	4.6	4.8	4.6	2.4	2.0	2.0	2.0	2.4	2.1
16	3.0	4.4	5.0	4.6	4.8	4.5	2.4	2.0	2.0	2.0	2.3	2.1
17	3.0	4.3	5.0	4.8	4.9	4.5	2.4	2.0	2.0	2.0	2.3	2.1
18	3.1	4.1	4.8	4.8	4.9	4.4	2.3	2.0	2.0	2.1	2.2	2.1
19	3.7	4.0	4.5	4.8	5.0	4.4	2.3	2.0	2.0	2.1	2.2	2.1
20	7.5	3.8	4.0	4.8	5.0	4.3	2.4	2.0	2.0	2.0	2.2	2.1
21	7.3	3.8	3.8	4.8	4.9	4.3	2.3	2.0	2.0	2.0	2.2	2.1
22	4.0	3.7	3.7	4.8	4.8	4.3	2.3	2.0	2.0	2.1	2.2	2.1
23	3.5	3.6	3.6	4.8	4.8	4.2	2.3	2.0	2.0	2.1	2.2	2.1
24	3.5	3.6	3.4	4.8	5.2	4.2	2.3	2.0	2.0	2.0	2.1	2.1
25	3.5	3.6	3.0	4.8	5.2	4.2	2.3	2.0	2.0	2.0	2.1	2.1
26	3.8	3.6	3.8	4.8	5.0	4.2	2.2	2.0	2.0	2.1	2.1	2.1
27	4.9	3.5	3.4	4.8	5.0	4.1	2.2	2.0	2.0	2.1	2.1	2.1
28	6.2	3.4	4.0	4.6	5.0	4.0	2.1	2.0	2.0	2.1	2.2	2.2
29	5.3	.....	4.0	4.6	4.9	3.8	2.1	2.0	2.0	2.1	2.2	2.2
30	9.2	.....	4.2	4.6	4.8	3.3	2.1	2.0	2.0	2.1	2.2	2.2
31	8.0	.....	4.7	.....	4.8	.....	2.0	2.0	.....	2.1	.....	2.1

Daily discharge, in second-feet, of Sacramento River at Antler, Cal., for 1910–11.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1		710	11		1,940	21	330	445
2		900	12		2,040	22	405	405
3		4,740	13		1,940	23	710	330
4		3,000	14		1,120	24	1,990	365
5		1,280	15		970	25	1,120	445
6		970	16		970	26	650	445
7		770	17		650	27	365	445
8		1,120	18		650	28	405	445
9		1,940	19	300	650	29	650	405
10		1,940	20	285	540	30	770	405
						31		405

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	445	4,290	1,040	2,620	1,940	2,160	710	245	245	330	270	300
2	445	5,830	1,460	5,200	1,940	2,040	595	245	245	365	270	300
3	405	3,410	1,840	4,440	2,040	2,040	595	245	245	330	270	300
4	365	3,000	2,160	5,200	2,040	2,040	595	245	245	330	270	300
5	365	2,620	2,500	6,830	2,160	2,040	595	245	245	330	270	300
6	365	3,560	11,400	5,670	2,160	2,040	595	245	245	300	270	300
7	365	1,840	14,000	5,200	2,160	2,160	595	245	245	270	270	330
8	365	1,840	11,200	5,040	2,160	2,160	595	245	245	270	270	330
9	405	1,740	10,600	4,440	2,160	2,160	595	245	245	300	300	365
10	445	2,260	9,860	3,700	2,160	2,160	595	245	245	270	405	330
11	445	3,560	8,580	3,560	2,260	2,040	490	245	245	300	405	300
12	445	2,500	7,000	2,870	1,940	2,040	445	245	245	270	405	300
13	490	2,380	4,290	2,160	2,040	1,940	445	245	245	270	405	270
14	540	2,040	2,380	2,160	2,160	1,940	445	245	245	270	405	270
15	650	1,940	2,380	1,940	2,160	1,940	365	245	245	245	365	270
16	650	1,740	2,380	1,940	2,160	1,840	365	245	245	245	330	270
17	650	1,640	2,380	2,160	2,260	1,840	365	245	245	245	330	270
18	710	1,460	2,160	2,160	2,260	1,740	330	245	245	270	300	270
19	1,120	1,370	1,840	2,160	2,380	1,740	330	245	245	270	300	270
20	6,000	1,200	1,370	2,160	2,380	1,640	365	245	245	245	300	270
21	5,670	1,200	1,200	2,160	2,260	1,640	330	245	245	245	300	270
22	1,370	1,120	1,120	2,160	2,160	1,640	330	245	245	270	300	270
23	970	1,040	1,040	2,160	2,160	1,550	330	245	245	270	300	270
24	970	1,040	900	2,160	2,620	1,550	330	245	245	245	270	270
25	970	1,040	650	2,160	2,620	1,550	330	245	245	245	270	270
26	1,200	1,040	1,200	2,160	2,380	1,550	300	245	245	270	270	270
27	2,260	970	900	2,160	2,380	1,460	300	245	245	270	270	270
28	3,990	900	1,370	1,940	2,380	1,370	270	245	245	270	300	300
29	2,740	.....	1,370	1,940	2,260	1,200	270	245	245	270	300	300
30	8,940	.....	1,550	1,940	2,160	835	270	245	245	270	300	300
31	6,830	.....	2,040	.....	2,160	.....	245	245	.....	270	.....	270

NOTE.—Daily discharge, 1910–11, determined from a rating curve well defined below 6,000 second-feet.

Monthly discharge of Sacramento River at Antler, Cal., for 1910–11.

[Drainage area, 461 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
November 19–30	1,990	285	665	1.44	0.64	15,800	A.
December	4,740	330	1,080	2.34	2.70	66,400	A.
1911.							
January	8,940	365	1,660	3.60	4.15	102.000	A.
February	5,830	900	2,090	4.53	4.72	116,000	A.
March	14,000	650	3,680	7.98	9.20	226,000	A.
April	6,830	1,940	3,080	6.68	7.45	183,000	A.
May	2,620	1,940	2,210	4.79	5.52	136,000	A.
June	2,160	835	1,800	3.90	4.35	107,000	A.
July	710	245	430	.933	1.08	26,400	A.
August	245	245	245	.531	.61	15,100	A.
September	245	245	245	.531	.59	14,600	A.
October	365	245	278	.603	.70	17,100	A.
November	405	270	310	.672	.75	18,400	A.
December	365	270	289	.627	.72	17,800	A.
The year	14,000	245	1,350	2.93	39.84	979,000	

SACRAMENTO RIVER NEAR RED BLUFF, CAL.

Location.—In lot 4, sec. 34, T. 28 N., R. 3 W., at the lower end of Iron Canyon, 4 miles above Red Bluff and about 3 miles below the proposed Iron Canyon dam site. Paines Creek enters about 3 miles above and Antelope Creek about 7 miles below the station.

Records available.—January 28, 1902, to December 31, 1911. The State engineer in 1879 and the commissioner of public works in 1893 and 1894 made measurements at this point. From April 30, 1895, to June 30, 1902, a gaging station was maintained at Jellys Ferry, 12 miles above Red Bluff.

Drainage area.—10,400 square miles, including Goose Lake drainage area of 1,090 square miles.

Gage.—Staff in three sections on the left bank. Several gages have been used at this station, but all observations have been reduced to the present datum.

Channel.—Coarse gravel and small bowlders, and is permanent.

Discharge measurements.—Made from a car and cable a short distance above the gage.

Diversions and storage.—No storage of any importance has been developed in the drainage area above this station. A small amount of water is diverted from some of the minor tributaries for irrigation. With this exception the record at this station gives the natural run-off from the basin.

Accuracy.—Results at this station are excellent.

Discharge measurements of Sacramento River near Red Bluff, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 9	H. D. McGlashan	12.40	55,500
Apr. 29	J. E. Stewart	[a] 5.22	17,100
Aug. 21	.....do	[b] 1.48	5,330

[a] Weather Bureau gage at Red Bluff read 6.15.
[b] Weather Bureau gage read 1.25 one hour after measurement.

Daily gage height, in feet, of Sacramento River near Red Bluff, Cal., for 1911.

[Richard Groebe, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.92	11.40	3.38	7.90	5.00	4.35	2.30	1.65	1.40	1.50	1.55	1.55
2	1.90	12.70	3.75	8.32	5.00	4.32	2.30	1.65	1.40	1.50	1.55	1.55
3	1.88	11.42	4.42	8.12	5.12	4.28	2.30	1.65	1.40	1.50	1.50	1.55
4	1.82	9.00	6.60	8.00	5.42	4.12	2.28	1.60	1.40	1.50	1.50	1.55
5	1.80	8.32	12.10	9.95	5.68	4.05	2.22	1.60	1.40	1.55	1.50	1.52
6	1.80	8.42	12.92	11.65	5.95	3.98	2.20	1.60	1.42	1.50	1.50	1.80
7	1.80	7.32	22.68	9.85	5.35	4.00	2.18	1.60	1.45	1.50	1.50	1.80
8	1.80	6.48	15.35	8.90	5.15	3.92	2.12	1.58	1.40	1.50	1.50	1.65
9	1.80	5.92	12.00	8.30	5.00	3.88	2.10	1.55	1.40	1.68	1.55	1.65
10	1.95	5.50	9.85	8.70	4.82	3.70	2.05	1.55	1.40	1.68	1.60	1.60
11	2.08	10.75	8.62	8.20	4.72	3.68	2.05	1.55	1.40	1.60	1.65	1.60
12	2.68	7.85	8.05	7.45	4.72	3.60	2.00	1.55	1.40	1.60	1.58	1.60
13	2.38	10.90	7.52	7.00	4.68	3.60	2.00	1.52	1.40	1.55	1.55	1.55
14	2.75	7.62	7.30	6.50	4.60	3.58	2.00	1.50	1.40	1.52	1.55	1.55
15	3.55	6.25	7.05	6.08	4.48	3.52	1.95	1.50	1.40	1.52	1.62	1.55
16	2.95	5.32	7.02	5.78	4.38	3.42	1.92	1.50	1.40	1.50	1.78	1.55
17	2.48	4.98	7.02	5.58	4.58	3.25	1.90	1.50	1.40	1.50	1.72	1.68
18	2.50	4.65	6.92	5.52	6.28	3.12	1.90	1.50	1.40	1.50	1.65	1.58
19	2.40	4.45	6.95	5.48	5.62	3.08	1.95	1.50	1.40	1.50	1.60	1.55
20	12.5	4.22	7.02	5.35	5.08	3.00	1.92	1.48	1.40	1.50	1.60	1.55
21	5.75	4.08	7.32	5.28	4.90	2.88	1.88	1.45	1.40	1.50	1.60	1.55
22	4.55	3.88	7.80	5.40	4.88	2.80	1.85	1.45	1.40	1.50	1.60	1.50
23	3.78	3.78	7.95	5.40	5.00	2.72	1.82	1.45	1.40	1.50	1.55	1.50
24	5.28	3.72	8.25	5.58	4.95	2.70	1.80	1.45	1.45	1.50	1.55	1.50
25	5.15	3.62	8.20	5.85	4.70	2.62	1.80	1.45	1.48	1.50	1.55	1.50
26	5.65	3.50	8.15	5.98	4.45	2.52	1.80	1.45	1.52	1.58	1.55	1.50
27	5.70	3.42	7.85	5.85	4.25	2.48	1.75	1.42	1.52	1.50	1.55	1.58
28	13.20	3.35	7.45	5.45	4.20	2.40	1.75	1.40	1.50	1.50	1.55	1.70
29	10.48	.....	7.28	5.20	4.10	2.38	1.72	1.40	1.50	1.50	1.55	1.60
30	13.40	.....	7.40	5.10	4.10	2.32	1.70	1.40	1.50	1.50	1.55	1.60
31	14.25	.....	7.75	.....	4.15	.....	1.65	1.42	.....	1.55	.....	1.60

Daily discharge, in second-feet, of Sacramento River near Red Bluff, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	6,400	46,400	10,800	29,000	16,600	14,200	7,430	5,720	5,110	5,350	5,470	5,470
2	6,350	53,800	12,100	30,900	16,600	14,100	7,430	5,720	5,110	5,350	5,470	5,470
3	6,300	46,500	14,500	30,000	17,100	13,900	7,430	5,720	5,110	5,350	5,350	5,470
4	6,140	34,100	23,200	29,400	18,200	13,400	7,370	5,590	5,110	5,350	5,350	5,470
5	6,090	30,900	50,300	38,800	19,300	13,100	7,210	5,590	5,110	5,470	5,350	5,400
6	6,090	31,400	55,100	47,800	20,400	12,900	7,150	5,590	5,160	5,350	5,350	6,090
7	6,090	26,300	130,000	38,300	18,000	12,900	7,100	5,590	5,230	5,350	5,350	6,090
8	6,090	22,600	70,600	33,600	17,200	12,700	6,930	5,540	5,110	5,350	5,350	5,720
9	6,090	20,300	49,700	30,800	16,600	12,500	6,880	5,470	5,110	5,790	5,470	5,720
10	6,480	18,600	38,300	32,700	15,900	11,900	6,740	5,470	5,110	5,790	5,590	5,590
11	6,830	42,900	32,300	30,300	15,600	11,800	6,740	5,470	5,110	5,590	5,720	5,590
12	8,540	28,700	29,600	26,900	15,600	11,500	6,610	5,470	5,110	5,590	5,540	5,590
13	7,650	43,700	27,200	24,900	15,400	11,500	6,610	5,400	5,110	5,470	5,470	5,470
14	8,760	27,700	26,200	22,700	15,100	11,500	6,610	5,350	5,110	5,400	5,470	5,470
15	11,400	21,600	25,100	20,900	14,700	11,300	6,480	5,350	5,110	5,400	5,640	5,470
16	9,380	17,900	25,000	19,700	14,300	10,900	6,400	5,350	5,110	5,350	6,040	5,470
17	7,940	16,500	25,000	18,900	15,000	10,400	6,350	5,350	5,110	5,350	5,890	5,790
18	8,000	15,300	24,500	18,600	21,800	9,930	6,350	5,350	5,110	5,350	5,720	5,540
19	7,710	14,600	24,700	18,500	19,000	9,800	6,480	5,350	5,110	5,350	5,590	5,470
20	52,600	13,700	25,000	18,000	16,900	9,540	6,400	5,300	5,110	5,350	5,590	5,470
21	19,600	13,200	26,300	17,700	16,200	9,160	6,300	5,230	5,110	5,350	5,590	5,470
22	14,900	12,500	28,500	18,200	16,200	8,910	6,220	5,230	5,110	5,350	5,590	5,350
23	12,200	12,200	29,200	18,200	16,600	8,660	6,140	5,230	5,110	5,350	5,470	5,350
24	17,700	12,000	30,600	18,900	16,400	8,600	6,090	5,230	5,230	5,350	5,470	5,350
25	17,200	11,600	30,300	20,000	15,500	8,360	6,090	5,230	5,300	5,350	5,470	5,350
26	19,200	11,200	30,100	20,500	14,600	8,060	6,090	5,230	5,400	5,540	5,470	5,350
27	19,400	10,900	28,700	20,000	13,800	7,940	5,960	5,160	5,400	5,350	5,470	5,540
28	56,800	10,700	26,900	18,400	13,700	7,710	5,960	5,110	5,350	5,350	5,470	5,840
29	41,500	.....	26,200	17,400	13,300	7,650	5,890	5,110	5,350	5,350	5,470	5,590
30	58,000	.....	26,700	17,000	13,200	7,500	5,840	5,110	5,350	5,350	5,470	5,590
31	63,300	.....	28,300	.....	13,500	.....	5,720	5,160	.....	5,470	.....	5,590

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Sacramento River near Red Bluff, Cal., for 1911.

[Drainage area, 10,400 *a* square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	63,300	6,090	17,100	1.64	1.89	1,050,000	A.
February	53,800	10,700	23,800	2.29	2.38	1,320,000	A.
March	130,000	10,800	33,300	3.20	3.69	2,050,000	A.
April	47,800	17,000	24,900	2.39	2.67	1,480,000	A.
May	21,800	13,300	16,200	1.56	1.80	996,000	A.
June	14,200	7,500	10,700	1.03	1.15	637,000	A.
July	7,430	5,720	6,550	.630	.73	403,000	A.
August	5,720	5,110	5,380	.517	.60	331,000	A.
September	5,400	5,110	5,170	.497	.55	308,000	A.
October	5,790	5,350	5,410	.520	.60	333,000	A.
November	6,040	5,350	5,520	.531	.59	328,000	A.
December	6,090	5,350	5,550	.534	.62	341,000	A.
The year	130,000	5,110	13,200	1.27	17.27	9,580,000	

a Drainage area changed from 9,300 square miles to 10,400 square miles to include Goose Lake basin, which is naturally a part of the Sacramento River basin.

PIT RIVER AND TRIBUTARIES.

PIT RIVER AT HENDERSON, CAL.

Location.—At Henderson Ferry, one-fourth mile above Henderson post office, in sec. 36, T. 37 N., R. 1 W. Nelson Creek enters half a mile above and Kosk Creek 1 mile below the station.

Records available.—September 28, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on an alder tree on left bank about 100 feet above the ferry.

Channel.—Small bowlders and coarse gravel and is fairly permanent.

Discharge measurements.—Made from car and cable 80 feet below gage.

Accuracy.—Sufficient discharge measurements have not been made to define the rating curve at medium and high stages.

The gage readings are not entirely satisfactory and are withheld pending the development of the rating curve when comparisons with the discharge at Ydalpom will aid in their proper interpretation.

Discharge measurements of Pit River at Henderson, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 9	G. T. Peekema	2.20	5,350
Aug. 12	J. E. Stewart	.98	3,110

PIT RIVER NEAR YDALPOM, CAL.

Location.—At Silverthorne Ferry, in the NW. ¼ sec. 32, T. 34 N., R. 3 W., 1½ miles southwest of Ydalpom and 7½ miles above junction with Sacramento River. Squaw Creek enters one-half mile above and McCloud River 4 miles below the station.

Records available.—November 16, 1910, to December 31, 1911

Drainage area.—6,350 square miles.

Gage.—Vertical staff on an ash tree on left bank 350 feet below ferry.

Channel.—Gravel and sand and appears permanent.

Discharge measurements.—On October 1, 1911, a car and cable were installed 50 feet above the ferry cable. Before this date gagings were made from a boat at this section.

Diversion.—Water is diverted above the station for irrigation from the main stream and from the tributaries.

Accuracy.—Results are good.

Discharge measurements of Pit River near Ydalpom, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 2[a]	G. T. Peekema	8.43	18,400
May 24[b]	do	4.92	6,040
Oct. 3[c]	do	3.00	3,110

[a] Measurement made from boat 30 feet below ferry cable; measurement very poor.
[b] Measurement made from boat 30 feet below ferry cable.
[c] Measurement made from cable.

Daily gage height, in feet, of Pit River near Ydalpom, Cal., for 1911.

[M. D. Rodrigue, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.3	7.6	4.0	8.3	5.3	4.4	3.4	3.15	3.0	3.0	3.05	3.1
2	3.3	9.8	4.0	8.3	5.3	4.4	3.4	3.15	3.0	3.0	3.05	3.1
3	3.25	8.5	4.05	8.4	5.6	4.35	3.4	3.15	3.0	3.0	3.05	3.1
4	3.25	7.6	4.2	8.25	5.45	4.35	3.4	3.1	3.0	3.05	3.05	3.1
5	3.25	7.6	4.95	8.1	5.7	4.35	3.4	3.1	3.0	3.05	3.1	3.1
6	3.25	7.7	6.65	10.1	5.5	4.3	3.4	3.1	3.0	3.05	3.1	3.1
7	3.25	6.95	10.8	10.05	5.4	4.3	3.4	3.1	3.0	3.05	3.1	3.1
8	3.25	6.65	9.9	9.2	5.25	4.2	3.4	3.1	3.0	3.05	3.1	3.1
9	3.25	6.5	8.0	8.1	5.2	4.2	3.4	3.1	3.0	3.05	3.1	3.1
10	3.3	6.45	7.7	8.0	5.2	4.1	3.4	3.1	3.0	3.05	3.2	3.1
11	3.4	6.55	7.45	7.8	5.1	4.0	3.35	3.1	3.0	3.05	3.2	3.1
12	3.45	6.9	7.45	7.55	5.0	3.95	3.35	3.1	3.0	3.05	3.2	3.1
13	3.4	6.9	7.55	7.2	4.95	4.0	3.35	3.05	3.0	3.05	3.2	3.1
14	3.5	6.2	7.75	6.8	4.8	3.95	3.35	3.05	3.0	3.1	3.25	3.1
15	3.7	5.75	7.5	6.6	4.75	3.95	3.35	3.05	3.0	3.1	3.25	3.1
16	3.55	5.1	7.5	6.1	4.85	3.9	3.35	3.0	3.0	3.1	3.25	3.1
17	3.45	4.85	7.5	6.0	4.85	3.9	3.3	3.0	3.0	3.1	3.2	3.1
18	3.4	4.8	7.65	5.9	7.15	3.8	3.3	3.0	3.0	3.1	3.2	3.1
19	4.7	4.7	7.8	5.7	5.6	3.75	3.3	3.0	3.0	3.1	3.2	3.1
20	6.5	4.55	7.9	5.6	5.4	3.7	3.3	3.0	3.0	3.1	3.2	3.1
21	4.7	4.4	8.0	5.5	5.2	3.7	3.3	3.0	3.0	3.1	3.2	3.1
22	4.2	4.4	8.6	5.55	5.1	3.7	3.3	3.0	3.0	3.1	3.2	3.1
23	3.85	4.35	8.8	5.6	5.0	3.65	3.3	3.0	3.0	3.1	3.2	3.1
24	3.95	4.3	9.0	5.6	4.9	3.65	3.25	3.0	3.0	3.05	3.2	3.1
25	4.2	4.3	9.4	5.7	4.8	3.6	3.25	3.0	3.0	3.05	3.2	3.1
26	4.55	4.2	9.2	5.7	4.7	3.55	3.25	3.0	3.0	3.05	3.2	3.1
27	5.3	4.1	8.9	5.7	4.6	3.4	3.25	3.0	3.0	3.05	3.1	3.1
28	7.2	4.0	8.5	5.5	4.45	3.5	3.2	3.0	3.0	3.05	3.1	3.1
29	6.15	.....	8.2	5.4	4.4	3.45	3.2	3.0	3.0	3.05	3.1	3.1
30	8.95	.....	8.25	5.35	4.5	3.4	3.2	3.0	3.0	3.05	3.1	3.1
31	8.95	.....	8.3	.....	4.45	.....	3.15	3.0	.....	3.05	.....	3.1

Daily discharge, in second-feet, of Pit River near Ydalpom, Cal., for 1910–11.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1		3,980	11		8,960	21	3,220	4,140
2		4,220	12		8,120	22	3,150	4,060
3		5,470	13		7,620	23	3,520	3,980
4		5,380	14		7,420	24	4,300	3,900
5		4,790	15		6,740	25	4,960	3,820
6		4,380	16	3,120	6,000	26	4,060	3,740
7		4,140	17	3,120	5,470	27	3,980	3,670
8		4,220	18	3,330	5,040	28	4,220	3,600
9		7,120	19	3,220	4,620	29	4,140	3,520
10		8,120	20	3,220	4,380	30	4,060	3,520
						31		3,520

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	3,520	11,900	4,620	13,700	6,930	5,300	3,670	3,300	3,080	3,080	3,150	3,220
2	3,520	17,700	4,620	13,700	6,930	5,300	3,670	3,300	3,080	3,080	3,150	3,220
3	3,440	14,200	4,700	13,900	7,520	5,220	3,670	3,300	3,080	3,080	3,150	3,220
4	3,440	11,900	4,960	13,600	7,220	5,220	3,670	3,220	3,080	3,150	3,150	3,220
5	3,440	11,900	6,270	13,200	7,720	5,220	3,670	3,220	3,080	3,150	3,220	3,220
6	3,440	12,200	9,720	18,600	7,320	5,130	3,670	3,220	3,080	3,150	3,220	3,220
7	3,440	10,400	20,600	18,400	7,120	5,130	3,670	3,220	3,080	3,150	3,220	3,220
8	3,440	9,720	18,000	16,100	6,840	4,960	3,670	3,220	3,080	3,150	3,220	3,220
9	3,440	9,390	12,900	13,200	6,740	4,960	3,670	3,220	3,080	3,150	3,220	3,220
10	3,520	9,280	12,200	12,900	6,740	4,790	3,670	3,220	3,080	3,150	3,370	3,220
11	3,670	9,500	11,600	12,400	6,550	4,620	3,600	3,220	3,080	3,150	3,370	3,220
12	3,740	10,300	11,600	11,800	6,360	4,540	3,600	3,220	3,080	3,150	3,370	3,220
13	3,670	10,300	11,800	11,000	6,270	4,620	3,600	3,150	3,080	3,150	3,370	3,220
14	3,820	8,750	12,300	10,100	6,000	4,540	3,600	3,150	3,080	3,220	3,440	3,220
15	4,140	7,820	11,700	9,610	5,910	4,540	3,600	3,150	3,080	3,220	3,440	3,220
16	3,900	6,550	11,700	8,540	6,090	4,460	3,600	3,080	3,080	3,220	3,440	3,220
17	3,740	6,090	11,700	8,330	6,090	4,460	3,520	3,080	3,080	3,220	3,370	3,220
18	3,670	6,000	12,100	8,120	10,900	4,300	3,520	3,080	3,080	3,220	3,370	3,220
19	5,820	5,820	12,400	7,720	7,520	4,220	3,520	3,080	3,080	3,220	3,370	3,220
20	9,390	5,560	12,700	7,520	7,120	4,140	3,520	3,080	3,080	3,220	3,370	3,220
21	5,820	5,300	12,900	7,320	6,740	4,140	3,520	3,080	3,080	3,220	3,370	3,220
22	4,960	5,300	14,500	7,420	6,550	4,140	3,520	3,080	3,080	3,220	3,370	3,220
23	4,380	5,220	15,000	7,520	6,360	4,060	3,520	3,080	3,080	3,220	3,370	3,220
24	4,540	5,130	15,500	7,520	6,180	4,060	3,440	3,080	3,080	3,150	3,370	3,220
25	4,960	5,130	16,600	7,720	6,000	3,980	3,440	3,080	3,080	3,150	3,370	3,220
26	5,560	4,960	16,100	7,720	5,820	3,900	3,440	3,080	3,080	3,150	3,370	3,220
27	6,930	4,790	15,300	7,720	5,640	3,670	3,440	3,080	3,080	3,150	3,220	3,220
28	11,000	4,620	14,200	7,320	5,380	3,820	3,370	3,080	3,080	3,150	3,220	3,220
29	8,640	.....	13,400	7,120	5,300	3,740	3,370	3,080	3,080	3,150	3,220	3,220
30	15,400	.....	13,600	7,020	5,470	3,670	3,370	3,080	3,080	3,150	3,220	3,220
31	15,400	.....	13,700	.....	5,380	.....	3,300	3,080	.....	3,150	.....	3,220

NOTE.—Daily discharge 1910–11 determined from a well-defined rating curve.

Monthly discharge of Pit River near Ydalpom, Cal., for 1910–11.

[Drainage area, 6,350[a] square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
November 16–30	4,960	3,120	3,710	0.584	0.33	110,000	A.
December	8,960	3,520	5,090	.802	.92	313,000	A.
1911.							
January	15,400	3,440	5,410	.852	.98	333,000	A.
February	17,700	4,620	8,420	1.33	1.38	468,000	A.
March	20,600	4,620	12,200	1.92	2.21	750,000	A.
April	18,600	7,020	10,600	1.67	1.86	631,000	A.
May	10,900	5,300	6,600	1.04	1.20	406,000	A.
June	5,300	3,670	4,500	.709	.79	268,000	A.
July	3,670	3,300	3,550	.559	.64	218,000	A.
August	3,300	3,080	3,150	.496	.57	194,000	A.
September	3,080	3,080	3,080	.485	.54	183,000	A.
October	3,220	3,080	3,170	.499	.58	195,000	A.
November	3,440	3,150	3,300	.520	.58	196,000	A.
December	3,220	3,220	3,220	.507	.58	198,000	A.
The year	20,600	3,080	5,580	.879	11.91	4,040,000	

[a] Includes Goose Lake drainage basin—1,090 square miles.

COTTONWOOD CREEK NEAR LAKEVIEW, OREG.

Location.—In sec. 29, T. 38 S., R. 19 E., about 10 miles west of Lakeview and about half a mile below the site of the Oregon Valley Land Co.'s proposed dam.

Records available.—November 22, 1908, to December 31, 1911.

Drainage area.—30 square miles.

Gage.—An inclined staff on the left bank about 25 feet above the footbridge. On November 22, 1908, a 10-foot trapezoidal weir was installed and a gage placed above it as an index to head. On January 19, 1909, the length of the weir was increased to 15 feet, a footbridge was installed about 1,000 feet below it, and an inclined gage (that now in use) was set on the left bank.

Channel.—Clean gravel; probably permanent; one at all stages; both banks low and wooded and may be overflowed at flood stages.

Winter flow.—Affected by ice for short periods during extremely cold weather.

Discharge measurements.—Made from the footbridge about one-fourth mile below a former camp and half a mile below the weir.

Accuracy.—The creek is subject to large diurnal fluctuations during the spring, and as the gage has been read only once or twice daily the determinations of flow are subject to considerable error.

Cooperation.—Station maintained in cooperation with the Lakeview Irrigation & Power Co.

The following discharge measurement was made by R. W. Davenport:

May 4, 1911: Gage height, 1.58 feet; discharge, 95 second-feet.

Daily gage height, in feet, of Cottonwood Creek near Lakeview, Oreg., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.45	1.25	0.48	2.6	1.65	1.60	0.72	0.42	0.20	0.28	0.20	0.38
2	.50	.80	.52	2.45	2.05	1.90	.72	.42	.18	.25	.20	.35
3	.48	.70	.88	2.45	1.60	1.80	.70	.40	.18	.25	.18	.32
4	.40	.58	1.20	2.45	1.85	1.95	.70	.40	.20	.28	.15	.32
5	.38	.40	.90	2.5	1.95	1.70	.70	.40	.22	.30	.18	.30
6	.35	.48	.80	2.6	1.90	1.80	.70	.42	.22	.28	.20	.35
7	.35	.90	.62	2.5	1.90	2.10	.68	.40	.25	.25	.22	.38
8	.35	1.25	.52	2.25	1.85	1.85	.65	.38	.22	.25	.25	.35
9	.32	1.15	.52	2.20	1.90	2.00	.65	.38	.22	.28	.25	.35
10	.32	1.20	.55	1.85	1.90	1.90	.65	.38	.20	.25	.28	.32
11	.30	1.20	.50	1.60	1.85	1.75	.62	.38	.20	.22	.28	.35
12	.30	1.10	.48	1.55	1.75	1.70	.62	.38	.18	.18	.25	.30
13	.32	1.10	.52	1.50	1.65	1.70	.60	.35	.18	.15	.22	.30
14	.28	1.00	.52	1.60	1.70	1.60	.58	.35	.18	.25	.30	.32
15	.38	1.20	.50	1.50	1.70	1.65	.58	.32	.15	.22	.45	.42
16	.32	1.15	.52	1.55	1.80	1.60	.58	.30	.15	.22	.55	.40
17	.30	1.10	.72	1.45	1.70	1.50	.55	.30	.18	.22	.55	.40
18	.32	1.20	.95	1.55	1.75	1.45	.55	.28	.15	.22	.50	.38
19	.38	1.25	1.20	1.25	1.75	1.40	.55	.25	.12	.20	.52	.32
20	.30	.80	1.50	1.25	1.70	1.20	.52	.28	.15	.20	.55	.40
21	.28	.65	1.80	1.30	1.42	1.50	.52	.28	.12	.18	.55	.45
22	.28	.62	2.5	1.40	1.70	1.25	.50	.25	.12	.22	.52	.50
23	.28	.60	2.6	2.05	1.45	1.00	.50	.28	.15	.25	.52	.45
24	.42	.68	2.45	2.10	1.50	1.00	.50	.25	.15	.22	.50	.60
25	.32	.60	2.6	2.00	1.60	.98	.48	.22	.18	.20	.50	.90
26	.30	.58	2.35	2.05	1.50	.92	.48	.22	.35	.20	.48	.88
27	.42	.52	2.20	2.40	1.45	.85	.48	.22	.30	.22	.42	.58
28	.48	.50	2.35	2.45	1.50	.78	.45	.20	.25	.25	.42	.35
29	.48	.....	2.00	2.00	1.45	.70	.45	.25	.25	.22	.40	.30
30	.52	.....	2.6	1.80	1.50	.75	.42	.25	.28	.20	.40	.25
31	.95	.....	2.6	.....	1.50	.....	.42	.22	.....	.18	.....	.22

NOTE.—Ice probably existed at this station from about Jan. 1 to Mar. 10 and Dec. 20 to 31; effect on the relation of gage height to discharge was not great during January but was considerable during February, March, and December. Corrections have been applied to many of the gage readings from Mar. 17 to May 17 to allow for diurnal fluctuation of stage.

Daily discharge, in second-feet, of Cottonwood Creek near Lakeview, Oreg., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	11	.....	.....	210	99	94	25	10	3	5	3	8
2	13	.....	.....	190	140	124	25	10	3	4	3	8
3	12	.....	.....	190	94	114	24	9	3	4	3	7
4	9	.....	.....	190	119	130	24	9	3	5	2	7
5	8	.....	.....	196	130	104	24	9	4	6	3	6
6	8	.....	.....	210	124	114	24	10	4	5	3	8
7	8	.....	.....	196	124	146	23	9	4	4	4	8
8	8	.....	.....	164	119	119	21	8	4	4	4	8
9	7	.....	.....	158	124	135	21	8	4	5	4	8
10	7	.....	.....	119	124	124	21	8	3	4	5	7
11	6	.....	13	94	119	109	19	8	3	4	5	8
12	6	.....	12	89	109	104	19	8	3	3	4	6
13	7	.....	14	84	99	104	18	8	3	2	4	6
14	5	.....	14	94	104	94	17	8	3	4	6	7
15	8	.....	13	84	104	99	17	7	2	4	11	10
16	7	.....	14	89	114	94	17	6	2	4	16	9
17	6	.....	25	80	104	84	16	6	3	4	16	9
18	7	.....	40	89	109	80	16	5	2	4	13	8
19	8	.....	58	62	109	75	16	4	2	3	14	7
20	6	.....	84	62	104	58	14	5	2	3	16	.....
21	5	.....	114	66	77	84	14	5	2	3	16	.....
22	5	.....	196	75	104	62	13	4	2	4	14	.....
23	5	.....	210	140	80	43	13	5	2	4	14	.....
24	10	.....	190	146	84	43	13	4	2	4	13	.....
25	7	.....	210	135	94	42	12	4	3	3	13	.....

Daily discharge, in second-feet, of Cottonwood Creek near Lakeview, Oreg., for 1911—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
26	6	.....	176	140	84	37	12	4	8	3	12	.....
27	10	.....	158	183	80	33	12	4	6	4	10	.....
28	12	.....	176	190	84	29	11	3	4	4	10	.....
29	12	.....	135	135	80	24	11	4	4	4	9	.....
30	14	.....	210	114	84	27	10	4	5	3	9	.....
31	10	.....	210	.....	84	.....	10	4	.....	3	.....	.....

NOTE.—Daily discharge determined from a rating curve fairly well defined below 150 second-feet; no reduction on account of ice Jan. 1 to 30; discharge Jan. 31 estimated because of ice.

Monthly discharge of Cottonwood Creek near Lakeview, Oreg., for 1911.

[Drainage area, 30 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	14	5	8.2	0.273	0.31	504	D.
February	.....	.....	a5.0	.167	.17	278	D.
March	210	.....	76.0	2.53	2.92	4,670	C.
April	210	62	132	4.40	4.91	7,860	C.
May	140	77	103	3.43	3.95	6,330	C.
June	146	24	84.3	2.81	3.14	5,020	C.
July	25	10	17.2	.573	.66	1,060	B.
August	10	3	6.5	.217	.25	400	B.
September	8	2	3.3	.110	.12	196	B.
October	6	2	3.9	.130	.15	240	B.
November	16	2	8.6	.287	.32	512	B.
December	10	.....	6.2	.207	.24	381	B.
The year	210	2	38.0	1.27	17.14	27,500	

a Estimated.

NOTE.—Discharge Jan. 31 to Mar. 10 and Dec. 20 to 31 corrected for effect of ice; mean discharge Mar. 1 to 10 estimated at about 8 second-feet; mean discharge Dec. 20 to 31 estimated at about 5 second-feet. The accuracy rating of the records, during the spring high water, at this station is lowered by the diurnal fluctuations in stage.

DREWS CREEK NEAR LAKEVIEW, OREG.

Location.—At a wagon bridge in sec. 4, T. 40 S., R. 18 E., 1 mile below Drews Creek Dam and 22 miles southwest of Lakeview.

Records available.—January 16, 1909, to December 31, 1911.

Drainage area.—211 square miles.

Gages.—At station No. 1, an inclined staff at the dam site, established January 16, 1909. Gage at station No. 2—at a dump car bridge 100 feet below the dam site—read from November 20, 1909, to March 1, 1910. Gage at present site, station No. 3, a staff established March 1, 1910. A Barrett-Lawrence automatic gage was installed December 13, 1911.

Channel.—Gravel; not likely to shift at high stages; creek overflows into a second channel; bed usually dry two or three months each year.

Discharge measurements.—Made from wagon bridge near gage or by wading.

Winter flow.—Affected by ice. Effect was not same in 1911 and was not taken into consideration in the estimates of discharge.

Accuracy.—The gage readings—two daily—indicate that the diurnal fluctuation is not marked except at extreme high water. Allowance has been made for the effect of ice during the winter months so that the accuracy of the estimate of total run-off is not affected.

Cooperation.—Observations made and records furnished by the Lakeview Irrigation & Power Co.

Discharge measurements of Drews Creek near Lakeview, Oreg., for 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 10	H. W. Fraim		12.3
Mar. 20	do	3.94	346
24	B. H. Page	5.90	1,060
May 5	R. W. Davenport	3.69	266
11	H. W. Fraim	3.30	190
Aug. 23	R. W. Davenport	1.54	[a] 0.05
Dec. 14[b]	W. O. Harmon	1.79	1.4

[a] Estimated. [b] Measured by wading.

Daily gage height, in feet, of Drews Creek near Lakeview, Oreg., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.0		6.4	3.8	3.0	2.0					
2							2.0					
3		2.3		6.05		3.0	2.0					
4				5.7		2.9						
5				5.8	3.9		1.9					
6			1.8			3.0	1.9					
7				4.9	3.7		1.9					
8				4.9		3.1	1.9					
9		1.8	1.8	5.15	3.5							
10					3.3	2.7	1.8					
11	1.8			4.0	3.3	2.7	1.8					
12	1.9	1.7	2.15	3.9		2.9	1.8					
13	1.9			3.8	3.35	2.6	1.8					1.79
14	1.9			3.75		2.7	1.7					1.79
15	1.9			3.7	3.4	2.6	1.7					1.77
16	1.85					2.6	1.7					1.76
17	1.9			4.2	3.3	2.6	1.8					1.76
18	1.9					2.5	1.8					1.75
19	1.9			4.1	3.3	2.5	1.8					1.75
20	1.85	1.7	3.95		3.2	2.5	1.7					1.75
21	1.9		4.5	4.05	3.0	2.4	1.7					1.75
22	1.9		5.2		2.9	2.4	1.6					1.75
23	1.9		6.4	4.2		2.3	1.6					1.75
24	1.9		6.0			2.3	1.5					1.75
25	1.85		5.6	4.4		2.2	1.5					1.75
26	1.8		5.7	4.15		2.2	1.5					1.75
27	1.8	1.6	4.8	4.2		2.1	1.5					1.75
28	1.8		6.0	4.0		2.1	1.5					1.75
29	1.8		6.0			2.0	1.5					1.75
30	1.85		5.85	3.9			1.5					1.74
31	1.9		6.2				1.5					1.74

NOTE.—Relation of gage height to discharge more or less affected by ice from Jan. 1 to Mar. 19. Channel dry from about July 24 to first part of November.

Daily discharge, in second-feet, of Drews Creek near Lakeview, Oreg., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	8	12	3	1,300	314	124	12					
2	8	22	4	1,210	321	124	12					
3	8	32	4	1,120	328	124	12					
4	8	20	4	970	335	106	10					
5	8	16	5	1,010	342	115	8					
6	6	12	5	834	314	124	8					
7	6	9	5	656	286	134	8					
8	6	7	5	656	260	144	8					
9	6	5	5	750	234	110	6					
10	6	12	10	560	188	75	5					
11	5	8	15	370	188	75	5					
12	8	3	20	342	194	106	5					
13	8	3	30	314	199	62	5					1.4
14	8	3	40	300	204	75	3					1.4
15	8	3	60	286	210	62	3					1.2
16	6	3	90	358	199	62	3					1.1
17	8	3	120	430	188	62	5					1.1
18	8	3	150	415	188	51	5					1.0
19	8	3	250	400	188	51	5					1.0
20	6	3	356	392	166	51	3					1.0
21	8	3	526	385	124	41	3					1.0
22	8	3	770	408	106	41	1					1.0
23	8	3	1,300	430	100	32	1					1.0
24	8	3	1,100	462	100	32	0					1.0
25	6	2	930	494	100	24	0					1.0
26	5	2	970	415	100	24	0					1.0
27	5	2	622	430	100	17	0					1.0
28	5	3	1,100	370	100	17	0					1.0
29	5	.....	1,100	356	100	12	0					1.0
30	6	.....	1,030	342	100	12	0					.9
31	8	.....	1,200	.....	100	.....	0					.9

NOTE.—Daily discharge January to July determined from a well-defined rating curve. Discharge Dec. 13 to 31 estimated from measurement Dec. 14. Daily discharge for days on which gage was not read interpolated or roughly estimated from the record of discharge of Cottonwood Creek. No correction for effect of ice.

Monthly discharge of Drews Creek near Lakeview, Oreg., for 1911.

[Drainage area, 211 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	8	5	6.9	0.033	0.04	424	D.
February	32	2	7.2	.034	.04	400	D.
March	1,300	3	382	1.81	2.09	23,500	B.
April	1,300	286	559	2.65	2.96	33,300	B.
May	342	100	193	.915	1.05	11,900	B.
June	144	12	69.6	.330	.37	4,140	B.
July	12	0	4.4	.022	.03	271	B.
August	0	0	0	.000	0	0	
September	0	0	0	.000	0	0	
October	0	0	0	.000	0	0	
November [a]	.....	.....	1.0	.005	.01	59.5	C.
December [a]	.....	.....	1.0	.005	.01	61.4	B.
The year	1,300	0	102	.483	6.60	74,200	

[a] Estimated.

NOTE.—Accuracy rating lowered by diurnal fluctuations in stage. Daily discharge Nov. 1 to Dec. 12 estimated at 1 second-foot.

HAT CREEK AT HAWKINS RANCH, NEAR HAT CREEK, CAL.

Location.—At Hawkins ranch, in sec. 5, T. 33 N., R. 5 E., 6 miles above Hat Creek.
Records available.—August 15 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff on upstream end of right abutment.
Channel.—Fairly smooth and probably permanent.
Discharge measurements.—Made from downstream side of footbridge.
Diversions.—The only diversion for irrigation of any importance above this station is the H. M. Wilcox ditch, which heads about one-half mile above the gage. About 40 second-feet is diverted by this canal at irregular intervals, as shown by the observer's notes.

The following discharge measurement was made by J. E. Stewart:
August 15, 1911: Gage height, 2.35 feet; discharge, 134 second-feet.

Daily gage height, in feet, of Hat Creek at Hawkins ranch, near Hat Creek, Cal., for 1911.

[Chas. Hawkins, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.60	2.55	2.70	2.70	17	2.50	2.42	2.65	2.70	2.60
2	.....	2.60	2.52	2.70	2.70	18	4.50	2.42	2.65	2.70	2.60
3	.....	2.60	2.58	2.70	2.70	19	2.52	2.50	2.68	2.70	2.60
4	.....	2.60	2.70	2.70	2.70	20	2.52	2.50	2.70	2.70	2.60
5	.....	2.58	2.70	2.70	2.70	21	2.52	2.42	2.70	2.70	2.60
6	.....	2.60	2.72	2.70	2.70	22	2.50	2.42	2.70	2.70	2.60
7	.....	2.62	2.75	2.70	2.65	23	2.35	2.60	2.70	2.70	2.60
8	.....	2.65	2.70	2.70	2.65	24	2.35	2.65	2.70	2.70	2.60
9	.....	2.60	2.70	2.70	2.65	25	2.35	2.65	2.70	2.70	2.60
10	.....	2.60	2.65	2.70	2.65	26	2.33	2.70	2.70	2.70	2.60
11	.....	2.62	2.65	2.70	2.65	27	2.30	2.70	2.70	2.70	2.60
12	.....	2.50	2.65	2.70	2.65	28	2.30	2.65	2.70	2.70	2.60
13	.....	2.52	2.65	2.70	2.62	29	2.30	2.60	2.70	2.70	2.60
14	.....	2.50	2.68	2.70	2.62	30	2.35	2.60	2.70	2.70	2.62
15	2.35	2.50	2.68	2.70	2.60	31	2.50	.....	2.70	.....	2.62
16	2.35	2.42	2.65	2.70	2.60						

NOTE.—Rise in gage height Aug. 17, Sept. 1, and Sept. 23 caused by turning in of irrigation ditch above the station; fall in gage heights Aug. 23 and Sept. 12 caused by turning out of irrigation ditch above station.

HAT CREEK AT HAT CREEK, CAL.

Location.—At the private highway bridge, or Morris ranch, in the Lassen National Forest, in the SE. ¼ sec. 10, T. 34 N., R. 4 E., M. D. M., 300 yards north of Hat Creek post office.
Records available.—September 22, 1910, to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff fastened to downstream end of right abutment of bridge.
Channel.—Gravel and small bowlders, and appears permanent.
Discharge measurements.—Made from downstream side of bridge.
Diversions.—On account of the diversions for irrigation above the station this record does not show the natural run-off from this drainage. On May 13, 1911, the nine ditches were diverting a total of 110 second-feet. Of this amount, it was estimated that 55 second-feet was returned to the stream above the gage.
Cooperation.—Gage-height record furnished by United States Forest Service.

Sufficient measurements have not been made to develop a rating curve for this station.

Discharge measurements of Hat Creek at Hat Creek, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 27	G. T. Peekema	2.40	150
May 13	Peekema and Seaborn	2.35	133
Aug. 14	J. E. Stewart	2.02	76

Daily gage height, in feet, of Hat Creek at Hat Creek, Cal., for 1911.

[Fred Seaborn, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1				2.45		2.32	2.50	2.03	2.18	2.37	2.52	
2	2.42	2.50				2.52					2.52	2.50
3	2.42					2.68				2.37		
4	2.42	2.50		2.50	2.32			2.05			2.52	
5	2.42						2.70	2.00	2.25	2.50	2.53	
6				2.50	2.33	2.70	2.73		2.27			
7	2.43	2.41		2.49					2.32		2.53	2.50
8					2.40		2.61	2.05	2.25			2.50
9		2.45	2.38		2.42	2.75			2.25	2.52	2.53	2.50
10	2.41						2.60				2.53	
11		2.46	2.40	2.49	2.39				2.27	2.50	2.53	2.50
12					2.33	2.82		2.04		2.51		
13				2.44	2.35	2.69			2.28	2.50	2.53	
14		2.40	2.38	2.44				2.02	2.20	2.52	2.52	2.50
15	2.47			2.44		2.70		2.03				
16	2.43	2.41	2.40		2.12					2.52	2.52	2.50
17	2.45											
18		2.41		2.47	2.26		2.63			2.52	2.50	2.51
19	2.54									2.52	2.51	
20			2.38	2.47	2.16	2.75			2.15		2.50	2.50
21	2.42	2.41				2.63			2.25	2.47		
22				2.47								
23	2.47	2.40			2.20			2.09	2.30			2.52
24	2.49		2.40									
25			2.40		2.17				2.33			
26	2.45							2.00	2.30	2.50		2.52
27			2.40	2.47		2.40	2.30					
28	2.47	2.40	2.40		2.24				2.26		2.51	
29				2.43		2.50		1.95	2.25	2.50		
30						2.48			2.25	2.52	2.50	
31	2.48		2.45					2.17		2.52		2.51

RISING RIVER NEAR CASSEL, CAL.

Location.—At highway bridge in sec. 8, T. 35 N., R. 4 E., about half a mile above junction with Hat Creek, and 1¼ miles south of Cassel.

Records available.—August 15 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on downstream side of bridge pier near left bank.

Channel.—Sand and gravel and is fairly permanent.

Discharge measurements.—Made from upstream side of bridge.

Diversions.—Record shows the natural flow of the stream. This stream, which is only about 2 miles long, is fed by springs and its flow is very constant.

The following discharge measurement was made by J. E. Stewart:
August 15, 1911: Gage height, 1.60 feet; discharge, 459 second-feet.

Daily gage height, in feet, of Rising River near Cassel, Cal., for 1911.

[De Forest Hobson, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.59	1.60	1.53	1.50	16	1.65	1.59	1.55	1.50	1.49
2	.....	1.59	1.60	1.53	1.50	17	1.60	1.59	1.55	1.50	1.49
3	.....	1.59	1.60	1.53	1.50	18	1.60	1.59	1.55	1.50	1.49
4	.....	1.60	1.60	1.52	1.50	19	1.60	1.59	1.55	1.50	1.49
5	.....	1.60	1.60	1.52	1.49	20	1.60	1.59	1.55	1.50	1.49
6	.....	1.60	1.59	1.50	1.49	21	1.60	1.59	1.50	1.50	1.49
7	.....	1.60	1.59	1.50	1.49	22	1.60	1.59	1.50	1.50	1.48
8	.....	1.60	1.59	1.50	1.49	23	1.60	1.59	1.50	1.50	1.47
9	.....	1.60	1.59	1.50	1.49	24	1.60	1.59	1.53	1.50	1.47
10	.....	1.60	1.59	1.50	1.49	25	1.60	1.59	1.55	1.50	1.47
11	.....	1.60	1.59	1.50	1.49	26	1.60	1.60	1.54	1.50	1.48
12	.....	1.60	1.59	1.50	1.49	27	1.59	1.60	1.55	1.50	1.48
13	.....	1.60	1.59	1.50	1.49	28	1.59	1.60	1.55	1.50	1.48
14	.....	1.59	1.55	1.50	1.49	29	1.59	1.60	1.55	1.50	1.48
15	1.60	1.59	1.55	1.50	1.49	30	1.59	1.60	1.52	1.50	1.48
						31	1.59	.....	1.52	.....	1.48

BURNEY CREEK NEAR BURNEY, CAL.

Location.—At highway bridge three-fourths of a mile northwest of Burney, in the SW. ¼ sec. 19, T. 35 N., R. 3 E., 3 miles above Goose Creek and 10 miles above junction with Pit River.

Records available.—August 14 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on upstream end of center pier of bridge.

Channel.—Gravel and sand and probably permanent.

Discharge measurements.—From bridge except at low water when measurements are made by wading.

Diversions.—Two miles above the station about 2 second-feet is diverted for irrigation during the summer months and 0.5 second-foot during the remainder of the year.

The following discharge measurement was made by J. E. Stewart:
August 14, 1911: Gage height, 1.01 feet; discharge, 24 second-feet.

Daily gage height, in feet, of Burney Creek near Burney, Cal., for 1911.

[John Henry Coupe, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	0.85	1.00	1.10	1.08	16	1.00	0.95	1.12	1.22	1.00
2	.....	.85	1.02	1.10	1.08	17	1.00	.92	1.10	1.18	1.10
3	.....	.88	1.02	1.10	1.05	18	.98	.92	1.10	1.15	1.10
4	.....	.90	1.18	1.10	1.05	19	.98	.92	1.10	1.12	1.10
5	.....	.92	1.10	1.10	1.05	20	.95	.92	1.10	1.12	1.10
6	.....	.98	1.08	1.10	1.20	21	.92	.92	1.10	1.12	1.10
7	.....	.98	1.05	1.10	1.15	22	.80	.95	1.10	1.12	1.10
8	.....	.95	1.05	1.08	1.10	23	.80	.95	1.10	1.10	1.10
9	.....	.95	1.28	1.08	1.10	24	.80	.95	1.10	1.10	1.00
10	.....	.95	1.18	1.60	1.00	25	.80	.95	1.08	1.10	1.00
11	.....	.98	1.12	1.20	1.00	26	.80	1.00	1.10	1.10	1.00
12	.....	.98	1.12	1.15	1.00	27	.80	1.00	1.10	.....	1.00
13	.....	.95	1.12	1.15	1.00	28	.80	1.00	1.10	.....	1.00
14	1.00	.92	1.12	1.12	1.00	29	.80	1.00	1.08	.....	1.00
15	1.00	.92	1.12	1.35	1.00	30	.85	1.00	1.10	1.08	1.00
						31	.85	.....	1.10	.....	1.00

KOSK CREEK NEAR HENDERSON, CAL.

Location.—At the bridge in sec. 12, T. 37 N., R. 1 W., on the Holm ranch, 4 miles north of Henderson, in Shasta National Forest, and 3½ miles above the mouth of the creek. Baker Creek enters about one-fourth mile below the station.

Records available.—October 1, 1910, to December 31, 1911.

Drainage area.—51.9 square miles.

Gage.—Vertical staff on an alder tree on left bank 100 feet above bridge.

Channel.—Gravel and small bowlders; fairly permanent.

Discharge measurements.—Made from bridge at high water; low-water measurements made by wading below the gage.

Accuracy.—Results are considered good. The discharge has been estimated for days on which the gage was not read.

Cooperation.—Gage-height record furnished by United States Forest Service.

Discharge measurements of Kosk Creek near Henderson, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 26	G. T. Peekema	5.35	788
May 10[a]	do	4.80	521
Aug. 12[b]	J. E. Stewart	3.16	53

[a] Made by wading in NW. ¼ sec. 24, T. 37 N., R. 1 W. [b] Made by wading 50 feet below gage.

Daily gage height, in feet, of Kosk Creek near Henderson, Cal., for 1911.

[H. R. Powers, observer.]

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1				4.55						
2										
3		6.15			3.65					
4			5.45		3.55	3.2				
5							3.05	2.95		
6		6.95								
7									2.95	
8			5.1	4.25	3.54					2.93
9						3.2	3.05			
10		6.0	4.8							
11		5.85	4.9	4.25						
12						3.16				2.93
13		5.32	4.78	4.1	3.5				2.95	
14								2.95		
15										
16		5.27			3.46	3.15				
17										
18							3.05			
19					3.4					
20		5.35	5.25					2.95	2.95	
21										
22				3.8	3.36					
23		5.38				3.15			2.95	
24			5.05							
25		5.45	4.95	3.75			3.05			
26	5.35									
27			4.9							
28		5.2							2.95	
29					3.2	3.1				
30		4.95					3.05			
31								2.95		

Daily discharge, in second-feet, of Kosk Creek near Henderson, Cal., for 1910–11.

[H. R. Powers, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1910.				1910.				1910.			
1	28	30	70	11	35	35	1,000	21	30	25	94
2	28	30	60	12	39	35	500	22	31	24	89
3	29	30	720	13	37	34	300	23	31	22	85
4	32	30	206	14	34	32	200	24	31	293	83
5	31	30	161	15	31	31	200	25	31	180	80
6	30	30	116	16	31	30	150	26	31	100	77
7	29	30	80	17	31	29	150	27	31	80	75
8	29	30	220	18	31	28	150	28	30	120	75
9	29	37	1,000	19	30	27	100	29	30	100	75
10	29	36	1,500	20	30	26	98	30	30	90	70
								31	30		70

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.										
1		1,200	540	398	132	56	45	41	33	33
2		1,350	500	372	129	56	44	38	33	32
3		1,300	630	356	126	56	43	36	33	32
4		1,250	864	340	107	56	42	34	33	32
5		2,300	1,000	326	106	56	42	33	33	31
6		1,810	900	312	106	56	42	33	33	31
7		1,500	800	298	106	56	42	33	33	31
8		1,250	664	283	105	56	42	33	33	31
9		1,050	570	283	104	56	42	33	33	31
10		1,210	510	283	102	54	42	33	33	31
11		1,120	558	283	100	54	42	33	33	31
12		950	530	259	99	52	42	33	33	31
13		788	501	235	98	52	42	33	33	31
14		780	470	226	96	52	42	33	33	31
15		770	450	217	94	52	42	33	33	31
16		759	530	208	92	51	42	33	33	30
17		770	600	200	89	51	42	33	33	30
18		780	1,200	192	85	51	42	33	33	30
19		790	950	184	82	51	42	33	33	30
20		805	748	175	80	51	42	33	33	30
21		810	630	166	78	51	42	33	33	30
22		817	600	157	76	51	42	33	33	29
23		822	620	153	73	51	42	33	33	29
24		843	637	150	70	50	42	33	33	29
25		864	584	146	67	49	42	33	33	29
26	805	1,000	570	143	64	48	42	33	33	29
27		850	558	141	62	48	42	33	33	29
28		720	470	138	59	47	42	33	33	29
29		650	400	136	56	46	42	33	33	29
30		584	400	134	56	46	42	33	33	29
31			400		56	45		33		29

NOTE.—Daily discharge determined from a fairly well-defined rating curve; discharge Nov. 26 to 29, Dec. 1 to 7, and 9 to 19, 1910, estimated from records of discharge of Pit River near Ydalpom, and precipitation records.

For days on which gage was not read during April and May, 1911, the discharge was determined from hydrographic comparison with McCloud River at Baird. Daily discharge interpolated for all other days on which gage was not read from June to December. Estimates of daily discharge for days on which gage was not read are roughly approximate and should be used with caution.

Monthly discharge of Kosk Creek near Henderson, Cal., for 1910–11.

[Drainage area, 51.9 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
October	39	28	30.9	0.595	0.69	1,900	B.
November	293	22	55.1	1.06	1.18	3,280	C.
December	1,500	60	253	4.87	5.62	15,600	C.
1911.							
April	2,300	584	1,020	19.7	21.98	60,700	B.
May	1,200	400	625	12.0	13.83	38,400	B.
June	398	134	230	4.43	4.94	13,700	B.
July	132	56	88.9	1.71	1.97	5,470	B.
August	56	45	51.8	1.00	1.15	3,190	B.
September	45	42	42.2	.813	.91	2,510	B.
October	41	33	33.5	.645	.74	2,060	B.
November	33	33	33.0	.636	.71	1,960	B.
December	33	29	30.3	.584	.67	1,860	B.
The period						130,000	

MONTGOMERY CREEK AT MONTGOMERY CREEK, CAL.

Location.—At highway bridge in sec. 36, T. 35 N., R. 1 W., about one-fourth mile south of Montgomery Creek post office, and 2 miles above junction with Pit River.

Records available.—August 11 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on a large alder tree on left bank 70 feet below the bridge.

Channel.—Small bowlders and gravel and is rough.

Discharge measurements.—Made by wading or from highway bridge.

Diversions.—About 5 miles above the station, the Terry Lumber Co. diverts water from this stream which is discharged into Little Cow Creek. During the logging season, from June to December, this diversion is from 8 to 10 second-feet. For the remainder of the year the amount is reduced to about 6 second-feet.

The following discharge measurement was made by J. E. Stewart by wading 80 feet below the gage:

August 11, 1911: Gage height, 0.74 foot; discharge, 23 second-feet.

Daily gage height, in feet, of Montgomery Creek at Montgomery Creek, Cal., for 1911.

[Edwin Fowler, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	0.64	0.70	0.66	0.62	16	0.69	0.62	0.68	0.69	0.64
2	.....	.63	.65	.66	.64	17	.69	.62	.69	.68	.66
3	.....	.62	.65	.66	.64	18	.69	.61	.66	.68	.66
4	.....	.61	.70	.72	.65	19	.69	.68	.66	.68	.63
5	.....	.61	.66	.68	.67	20	.70	.62	.66	.66	.64
6	.....	.61	.64	.64	.64	21	.69	.68	.66	.65	.66
7	.....	.62	.65	.65	.62	22	.69	.62	.69	.64	.71
8	.....	.60	.71	.68	.62	23	.69	.60	.68	.65	.67
9	.....	.61	.78	.69	.64	24	.69	.60	.66	.64	.64
10	.....	.61	.70	.75	.62	25	.69	.61	.68	.64	.65
11	0.72	.60	.70	.68	.62	26	.69	.72	.68	.66	.68
12	.72	.60	.70	.68	.62	27	.69	.70	.69	.66	.72
13	.71	.61	.70	.68	.62	28	.69	.64	.68	.64	.82
14	.69	.62	.70	.68	.62	29	.68	.68	.69	.64	.88
15	.70	.62	.71	.80	.62	30	.67	.64	.68	.64	.72
						31	.62	.....	.66	.....	.81

SQUAW CREEK NEAR YDALPOM, CAL.

Location.—At the highway bridge in sec. 29, T. 34 N., R. 3 W., three-fourths of a mile southwest of Ydalpom (Copper City), and three-fourths of a mile above junction with Pit River.

Records available.—October 4 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on upstream end of right pier of bridge.

Channel.—Gravel and cobblestones; will shift slightly at high stages.

Discharge measurements.—Made from the bridge or by wading.

Diversions.—One small ditch diverts water for irrigation above the station.

Discharge measurements of Squaw Creek near Ydalpom, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 2	G. T. Peekema	3.71	557
Oct. 4[a]	do	1.61	35

[a] Made by wading one-half mile below gage.

Daily gage height, in feet, of Squaw Creek near Ydalpom, Cal., for 1911.

[Mrs. Lem Williams, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	1.6	1.6	11	1.9	1.8	1.6	21	1.6	1.6	1.6
2	.....	1.6	1.6	12	1.8	1.7	1.6	22	1.6	1.6	1.6
3	.....	1.6	1.6	13	1.7	1.6	1.7	23	1.6	1.6	1.6
4	1.6	1.6	1.6	14	1.5	1.6	1.7	24	1.6	1.6	1.5
5	1.6	1.6	1.9	15	1.6	2.0	1.6	25	1.6	1.6	1.5
6	1.6	1.6	1.8	16	1.6	1.8	1.6	26	1.7	1.6	1.5
7	1.5	1.6	1.7	17	1.6	1.7	1.6	27	1.6	1.6	1.6
8	1.5	1.6	1.6	18	1.6	1.7	1.6	28	1.6	1.6	1.6
9	1.5	1.6	1.6	19	1.6	1.7	1.6	29	1.6	1.6	1.7
10	1.5	2.1	1.6	20	1.6	1.6	1.6	30	1.6	1.6	1.7
								31	1.6	.....	1.8

M'CLOUD RIVER AT BAIRD, CAL.

Location.—At the United States fishery at Baird, in the NW. ¼ sec. 23, T. 34 N., R. 4 W., about 2 miles above junction with Pit River. Bailey Creek enters about 2,000 feet above and Johns Creek 2,000 feet below the station.

Records available.—December 22, 1910, to December 31, 1911.

Drainage area.—665 square miles.

Gage.—Vertical staff fastened to an alder tree on right bank, 600 feet above the hatchery.

Channel.—Gravel and cobblestones; permanent.

Discharge measurements.—Made from car and cable 100 feet below gage. Previous to September 27, 1911, measurements were made from a boat at the same section.

Accuracy.—Results are good.

Cooperation.—Gage-height record furnished by G. H. Lambson, superintendent of United States fishery.

Discharge measurements of McCloud River at Baird, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 1 [a]	G. T. Peekema	5.02	4,270
May 23 [a]	do	4.57	3,260
Sept 27 [b]	do	2.00	1,270

[a] Made from boat about 100 feet below the gage. [b] Made from cable.

Daily gage height, in feet, of McCloud River at Baird, Cal., for 1911.

[G. H. Lambson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.97	6.85	2.60	5.05	4.20	4.30	2.90	2.43	2.30	2.28	2.18	2.08
2	1.95	6.50	2.62	5.15	4.19	4.30	2.87	2.41	2.30	2.27	2.18	2.08
3	1.94	6.52	2.59	5.10	4.40	4.20	2.85	2.40	2.29	2.25	2.17	2.08
4	1.91	6.52	2.79	5.00	4.90	4.22	2.83	2.40	2.28	2.23	2.15	2.08
5	1.91	5.00	4.40	7.60	5.02	4.18	2.85	2.39	2.27	2.20	2.15	2.08
6	1.91	4.90	7.45	7.00	4.80	4.08	2.85	2.39	2.26	2.20	2.15	2.28
7	1.91	4.40	9.40	6.10	4.40	4.00	2.83	2.39	2.26	2.21	2.15	2.15
8	1.91	4.10	7.45	5.65	4.39	3.92	2.78	2.38	2.26	2.21	2.15	2.12
9	1.93	3.75	6.25	5.60	4.29	3.88	2.78	2.37	2.26	2.41	2.16	2.08
10	1.94	3.60	5.40	5.85	4.10	3.80	2.75	2.37	2.27	2.21	2.17	2.08
11	2.54	5.20	4.80	5.50	4.08	3.80	2.71	2.36	2.27	2.21	2.18	2.08
12	2.12	5.30	4.50	5.15	4.09	3.80	2.70	2.36	2.27	2.18	2.18	2.08
13	2.09	5.00	4.30	4.85	4.10	3.72	2.70	2.36	2.27	2.20	2.19	2.08
14	2.09	4.30	4.10	4.60	4.01	3.72	2.69	2.36	2.27	2.21	2.20	2.08
15	2.35	3.90	4.10	4.40	3.97	3.70	2.67	2.36	2.27	2.21	2.40	2.08
16	2.29	3.60	4.09	4.30	4.10	3.62	2.65	2.36	2.26	2.19	2.26	2.04
17	2.20	3.35	4.09	4.25	4.28	3.50	2.65	2.35	2.25	2.15	2.22	2.04
18	2.29	3.25	4.05	4.15	5.30	3.50	2.68	2.35	2.24	2.15	2.22	2.04
19	4.30	3.10	4.11	4.25	4.95	3.42	2.65	2.33	2.25	2.24	2.20	2.04
20	5.20	2.95	4.19	4.18	4.60	3.38	2.65	2.32	2.25	2.16	2.17	2.04
21	3.31	3.00	4.30	4.20	4.50	3.30	2.59	2.32	2.25	2.22	2.17	2.02
22	3.10	2.90	4.50	4.25	4.50	3.27	2.57	2.32	2.24	2.26	2.17	2.02
23	2.75	2.90	4.60	4.40	4.52	3.18	2.55	2.31	2.23	2.28	2.16	2.00
24	2.30	2.82	4.90	4.50	4.54	3.18	2.52	2.31	2.21	2.37	2.18	2.00
25	2.93	2.80	4.70	4.70	4.41	3.12	2.54	2.31	2.22	2.22	2.16	2.00
26	3.52	2.78	4.45	4.90	4.30	3.08	2.51	2.31	2.29	2.23	2.14	2.00
27	4.52	2.71	4.25	4.75	4.19	3.05	2.49	2.31	2.27	2.22	2.12	2.00
28	5.80	2.68	4.15	4.45	4.10	3.00	2.47	2.30	2.25	2.26	2.08	2.00
29	4.72	.....	4.10	4.30	4.10	2.98	2.45	2.30	2.22	2.18	2.08	2.00
30	5.90	.....	4.60	4.21	4.12	2.95	2.45	2.30	2.20	2.18	2.07	2.00
31	6.80	.....	4.90	.....	4.15	.....	2.45	2.30	.....	2.18	.....	2.00

Daily discharge, in second-feet, of McCloud River at Baird, Cal., for 1910–11.

Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.
1910.		1910.		1910.		1910.		1910.		1910.	
1	.....	6	.....	11	.....	16	.....	21	.....	26	1,280
2	.....	7	.....	12	.....	17	.....	22	1,320	27	1,270
3	.....	8	.....	13	.....	18	.....	23	1,320	28	1,270
4	.....	9	.....	14	.....	19	.....	24	1,310	29	1,270
5	.....	10	.....	15	.....	20	.....	25	1,290	30	1,270
										31	1,260

Daily discharge, in second-feet, of McCloud River at Baird, Cal., for 1910–11—Contd.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	1,260	7,020	1,600	4,120	3,040	3,160	1,810	1,500	1,420	1,410	1,350	1,300
2	1,260	6,350	1,610	4,260	3,030	3,160	1,800	1,490	1,420	1,400	1,350	1,300
3	1,250	6,390	1,590	4,190	3,280	3,040	1,780	1,480	1,410	1,390	1,340	1,300
4	1,240	6,390	1,730	4,050	3,910	3,060	1,760	1,480	1,410	1,380	1,340	1,300
5	1,240	4,050	3,280	8,500	4,080	3,020	1,780	1,470	1,400	1,360	1,340	1,300
6	1,240	3,910	8,200	7,300	3,780	2,910	1,780	1,470	1,400	1,360	1,340	1,410
7	1,240	3,280	12,600	5,670	3,280	2,820	1,760	1,470	1,400	1,370	1,340	1,340
8	1,240	2,930	8,200	4,980	3,270	2,730	1,730	1,470	1,400	1,370	1,340	1,320
9	1,250	2,550	5,920	4,900	3,150	2,690	1,730	1,460	1,400	1,490	1,340	1,300
10	1,250	2,400	4,610	5,280	2,930	2,600	1,700	1,460	1,400	1,370	1,340	1,300
11	1,560	4,330	3,780	4,750	2,910	2,600	1,680	1,460	1,400	1,370	1,350	1,300
12	1,320	4,470	3,400	4,260	2,920	2,600	1,670	1,460	1,400	1,350	1,350	1,300
13	1,310	4,050	3,160	3,840	2,930	2,520	1,670	1,460	1,400	1,360	1,360	1,300
14	1,310	3,160	2,930	3,520	2,830	2,520	1,660	1,460	1,400	1,370	1,360	1,300
15	1,450	2,710	2,930	3,280	2,790	2,500	1,650	1,460	1,400	1,370	1,480	1,300
16	1,410	2,400	2,920	3,160	2,930	2,420	1,640	1,460	1,400	1,360	1,400	1,290
17	1,360	2,160	2,920	3,100	3,140	2,300	1,640	1,450	1,390	1,340	1,370	1,290
18	1,410	2,080	2,880	2,980	4,470	2,300	1,660	1,450	1,380	1,340	1,370	1,290
19	3,160	1,960	2,940	3,100	3,980	2,230	1,640	1,440	1,390	1,380	1,370	1,290
20	4,330	1,840	3,030	3,020	3,520	2,190	1,640	1,430	1,390	1,340	1,340	1,290
21	2,130	1,880	3,160	3,040	3,400	2,120	1,590	1,430	1,390	1,370	1,340	1,280
22	1,960	1,810	3,400	3,100	3,400	2,100	1,580	1,430	1,380	1,400	1,340	1,280
23	1,700	1,810	3,520	3,280	3,420	2,020	1,570	1,430	1,380	1,410	1,340	1,270
24	1,420	1,750	3,910	3,400	3,450	2,020	1,550	1,430	1,370	1,460	1,350	1,270
25	1,830	1,740	3,650	3,650	3,290	1,980	1,560	1,430	1,370	1,370	1,340	1,270
26	2,320	1,730	3,340	3,910	3,160	1,940	1,550	1,430	1,410	1,380	1,330	1,270
27	3,420	1,680	3,100	3,720	3,030	1,920	1,530	1,430	1,400	1,370	1,320	1,270
28	5,200	1,660	2,980	3,340	2,930	1,880	1,520	1,420	1,390	1,400	1,300	1,270
29	3,680	.....	2,930	3,160	2,930	1,870	1,510	1,420	1,370	1,350	1,300	1,270
30	5,350	.....	3,520	3,050	2,950	1,840	1,510	1,420	1,360	1,350	1,300	1,270
31	6,920	.....	3,910	.....	2,980	.....	1,510	1,420	.....	1,350	.....	1,270

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of McCloud River at Baird, Cal., for 1910–11.

[Drainage area, 665 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
December 22–31	1,320	1,260	1,290	1.94	0.72	25,600	A.
1911.							
January	6,920	1,240	2,160	3.25	3.75	133,000	A.
February	7,020	1,660	3,160	4.75	4.95	176,000	A.
March	12,600	1,590	3,800	5.71	6.58	234,000	A.
April	8,500	2,980	4,060	6.11	6.82	242,000	A.
May	4,470	2,790	3,260	4.90	5.65	200,000	A.
June	3,160	1,840	2,440	3.67	4.10	145,000	A.
July	1,810	1,510	1,650	2.48	2.86	101,000	A.
August	1,500	1,420	1,450	2.18	2.51	89,200	B.
September	1,420	1,360	1,390	2.09	2.33	82,700	B.
October	1,490	1,340	1,380	2.08	2.40	84,800	B.
November	1,480	1,300	1,350	2.03	2.26	80,300	B.
December	1,410	1,270	1,290	1.94	2.24	79,300	B.
The year	12,600	1,240	2,280	3.43	46.45	1,650,000	

CLEAR CREEK NEAR SHASTA, CAL.

Location.—At suspension footbridge, in the SE. ¼ sec. 17, T. 32 N., R. 6 W., at Whiskeytown and 5 miles northwest of Shasta. Brandy Creek and Whisky Creek enter about 1,000 feet below the station.

Records available.—August 31 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff, in three sections, on right bank. Low-water section is fastened to a large rock 60 feet below bridge. High-water sections are 30 feet below bridge.

Channel.—Solid rock and bowlders; permanent.

Discharge measurements.—Made from suspension bridge at medium and high stages; at low water, measurements are made by wading above the bridge.

Diversions.—Several small ditches divert water above the station.

Discharge measurements of Clear Creek near Shasta, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 30[a]	G. T. Peekema	2.98	21
Sept. 27[b]	do	3.18	43

[a] Made by wading 600 feet above gage. [b] Made by wading 200 feet above gage.

Daily gage height, in feet, of Clear Creek near Shasta, Cal., for 1911.

[J. F. Schilling, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.8	2.8	2.8	2.8	16	.....	2.9	2.8	2.8	2.8
2	.....	3.0	2.8	2.8	2.8	17	.....	2.9	2.8	2.8	2.8
3	.....	2.8	2.8	2.8	2.8	18	.....	2.9	2.8	2.8	2.8
4	.....	2.8	2.8	2.8	2.8	19	.....	2.9	2.8	2.8	2.8
5	.....	2.8	2.8	2.8	2.8	20	.....	2.8	2.8	2.8	2.8
6	.....	2.9	2.8	2.8	3.1	21	.....	2.8	2.8	2.8	2.8
7	.....	2.9	2.8	2.8	3.0	22	.....	2.8	2.8	2.8	2.8
8	.....	3.0	2.8	2.8	2.8	23	.....	2.8	2.8	2.8	2.8
9	.....	3.0	2.8	2.8	2.8	24	.....	2.8	2.8	2.8	2.8
10	.....	2.9	2.8	2.8	2.8	25	.....	2.9	2.8	2.8	2.8
11	.....	2.9	2.8	2.8	2.8	26	.....	2.9	2.8	2.8	2.8
12	.....	3.0	2.8	2.8	2.8	27	.....	2.9	2.8	2.8	3.2
13	.....	2.9	2.8	2.8	2.8	28	.....	2.8	2.8	2.8	3.2
14	.....	2.9	2.8	2.8	2.8	29	.....	2.8	2.8	2.8	3.4
15	.....	2.9	2.8	2.8	2.8	30	3.0	2.8	2.8	2.8	3.5
						31	3.0	.....	2.8	.....	3.6

NOTE.—The accuracy of the gage readings during 1911 is doubtful.

COW CREEK AND TRIBUTARIES.

COW CREEK AT MILLVILLE, CAL.

Location.—At highway bridge in the NW. ¼ sec. 14, T. 31 N., R. 3 W., in Millville. Clover Creek enters three-fourths mile below the station.

Records available.—August 10 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on large oak tree on right bank, 6 feet below bridge.

Channel.—Gravel and small bowlders, and will shift at high stages.

Discharge measurements.—Made from bridge at high stages. At low water measurements are made by wading about 500 feet below the bridge.

Diversions.—Several small ditches divert water for irrigation above the station.

Discharge measurements of Cow Creek at Millville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 10[a]	J. E. Stewart	0.75	63
Aug. 18[a]	do	.75	63

[a] Made by wading 500 feet below gage.

Daily gage height, in feet, of Cow Creek at Millville, Cal., for 1911.

[Mrs. M. D. Rathbun, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	0.72	0.85	0.90	1.00	16	0.80	0.75	0.90	1.05	1.10
2	.....	.70	.90	.90	1.00	17	.80	.75	.90	1.25	1.02
3	.....	.72	.85	.95	1.00	18	.70	.75	.90	1.00	1.00
4	.....	.70	.85	.90	1.00	19	.70	.78	.90	1.00	1.00
5	.....	.70	.85	.95	1.10	20	.70	.78	.90	1.00	.90
6	.....	.72	.85	.95	1.10	21	.75	.80	.90	1.00	1.00
7	.....	.74	.85	.95	1.00	22	.80	.82	.90	1.00	1.00
8	.....	.72	.88	.95	1.00	23	.75	.84	.90	1.00	1.00
9	.....	.72	1.32	.98	1.00	24	.75	.81	.90	1.00	1.00
10	0.75	.75	1.00	1.25	1.00	25	.75	.82	.90	1.00	.90
11	.80	.88	.95	.98	1.00	26	.70	1.00	.90	1.00	.90
12	.80	.74	.92	.94	1.00	27	.70	.84	.90	1.00	1.05
13	.80	.78	.92	1.00	1.00	28	.65	.85	.90	1.00	1.10
14	.75	.76	.90	1.30	1.00	29	.65	.85	.90	1.00	1.00
15	.75	.75	.90	1.05	1.00	30	.70	.85	.90	1.00	1.00
						31	.70	.....	.90	.....	1.10

CLOVER CREEK AT MILLVILLE, CAL.

Location.—At highway bridge, in the SE. ¼ sec. 10, T. 31 N., R. 3 W., in Millville, one-fourth mile above junction with Cow Creek.

Records available.—August 10 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on downstream end of bridge pier near left bank.

Channel.—Sand and gravel, and appears permanent.

Discharge measurement.—Made by wading.

Diversions.—Water is diverted for irrigation above the station.

The following discharge measurement was made by J. E. Stewart:
August 10, 1911: Gage height, 1.90 feet; discharge, 5.7 second-feet.

Daily gage height, in feet, of Clover Creek at Millville, Cal., for 1911.

[H. H. Butzbach, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.95	2.10	2.10	2.15	16	1.95	2.00	2.10	2.28	2.18
2	.....	1.92	2.15	2.10	2.15	17	1.98	2.00	2.10	2.20	2.28
3	.....	1.92	2.10	2.10	2.15	18	2.00	2.00	2.08	2.20	2.25
4	.....	1.95	2.10	2.10	2.15	19	1.95	1.90	2.08	2.18	2.25
5	.....	1.92	2.12	2.10	2.15	20	1.95	1.90	2.08	2.18	2.25
6	.....	1.95	2.10	2.10	2.15	21	1.95	1.92	2.10	2.15	2.25
7	.....	1.98	2.10	2.10	2.18	22	1.92	1.92	2.10	2.20	2.25
8	.....	2.00	2.08	2.10	2.18	23	1.92	1.92	2.10	2.20	2.25
9	.....	1.95	2.50	2.10	2.18	24	1.92	1.95	2.10	2.15	2.15
10	1.90	1.98	2.20	2.10	2.18	25	1.92	1.98	2.10	2.18	2.15
11	1.90	2.00	2.18	2.10	2.18	26	1.92	2.15	2.10	2.15	2.15
12	1.90	2.00	2.18	2.15	2.18	27	1.92	2.12	2.10	2.18	2.15
13	2.00	2.00	2.12	2.15	2.18	28	1.95	2.10	2.10	2.18	2.15
14	1.92	2.00	2.12	2.15	2.15	29	1.95	2.10	2.10	2.18	2.22
15	1.92	2.02	2.10	2.18	2.15	30	1.92	2.10	2.10	2.18	2.22
						31	1.95	.....	2.10	.....	2.30

LITTLE COW CREEK AT PALO CEDRO, CAL.

Location.—At highway bridge, in sec. 5, T. 31 N., R. 3 W., one-fourth mile east of Palo Cedro and one-fourth mile above junction with Cow Creek.

Records available.—August 9 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on bridge pier near right bank.

Channel.—Gravel and small bowlders; may shift slightly at high stages.

Discharge measurements.—From bridge, except at low stages, when measurements are made by wading above the gage.

Diversions.—A small amount of water is pumped from this stream for irrigation. The Terry Lumber Co.'s flume, which is supplied by a diversion from Montgomery Creek, discharges into this stream. From June to December this amounts to 8 or 10 second-feet. For the remainder of the year this is reduced to about 6 second-feet.

The following discharge measurement was made by J. E. Stewart by wading 600 feet above the gage:

August 9, 1911: Gage height, 1.62 feet; discharge, 8.7 second-feet.

Daily gage height, in feet, of Little Cow Creek at Palo Cedro, Cal., for 1911.

[Richard Logan, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.5	1.7	1.9	1.9	16	1.6	1.6	1.8	2.1	1.95
2	.....	1.6	1.75	1.85	1.95	17	1.6	1.6	1.8	2.1	1.95
3	.....	1.5	1.8	1.9	1.95	18	1.6	1.55	1.8	2.0	1.9
4	.....	1.5	1.8	1.9	1.95	19	1.6	1.55	1.8	1.95	2.0
5	.....	1.55	1.8	1.85	1.95	20	1.6	1.5	1.8	1.9	2.0
6	.....	1.55	1.8	1.9	1.9	21	1.5	1.6	1.8	1.9	2.0
7	.....	1.55	1.75	1.9	2.0	22	1.65	1.65	1.8	1.95	2.0
8	.....	1.6	1.75	1.9	1.9	23	1.55	1.6	1.8	1.95	2.0
9	1.6	1.6	1.8	1.9	1.95	24	1.6	1.6	1.8	1.9	2.0
10	1.65	1.65	1.85	1.9	1.95	25	1.6	1.7	1.9	1.9	1.9
11	1.6	1.65	1.85	1.95	1.9	26	1.55	1.75	1.85	1.9	1.9
12	1.5	1.6	1.85	1.95	1.9	27	1.55	1.8	1.8	1.95	1.9
13	1.58	1.65	1.85	1.95	1.9	28	1.6	1.75	1.8	1.95	1.9
14	1.48	1.65	1.85	1.95	1.9	29	1.6	1.75	1.85	1.9	2.0
15	1.5	1.6	1.8	2.0	1.9	30	1.6	1.65	1.9	1.95	2.0
						31	1.55	.....	1.9	.....	2.0

BEAR CREEK NEAR MILLVILLE, CAL.

Location.—At highway bridge, in sec. 36, T. 31 N., R. 3 W., 4 miles southeast of Millville and 5 miles above junction with Sacramento River.

Records available.—August 19 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on upstream side of bridge pier near left bank.

Channel.—Small bowlders; rough.

Discharge measurements.—Made by wading about 50 feet above the gage, except at high stages, when measurements are made from the bridge.

The following discharge measurement was made by J. E. Stewart:

August 19, 1911: Gage height, 0.67 foot; discharge, 33 second-feet.

Daily gage height, in feet, of Bear Creek near Millville, Cal., for 1911.

[C. L. Lack and Fred Dersch, observers.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	0.68	0.85	1.00	1.80	16	.....	0.78	0.92	1.80	1.75
2	.....	.68	.85	1.00	1.80	17	.....	.78	.92	1.80	1.80
3	.....	.68	.85	1.00	1.80	18	.....	.78	.92	1.80	1.75
4	.....	.70	.85	1.00	1.80	19	0.68	.78	.92	1.80	1.75
5	.....	.70	.88	1.10	1.80	20	.68	.78	.92	1.80	1.75
6	.....	.70	.88	1.00	1.80	21	.68	.78	.92	1.80	1.75
7	.....	.70	.88	1.00	1.80	22	.68	.78	.95	1.80	1.70
8	.....	.70	.88	1.00	1.80	23	.68	.78	.95	1.80	1.70
9	.....	.70	1.38	1.00	1.80	24	.68	.78	.98	1.80	1.65
10	.....	.75	1.40	1.75	1.80	25	.68	.80	1.00	1.80	1.65
11	.....	.75	.98	1.75	1.80	26	.68	.88	1.00	1.80	1.65
12	.....	.75	.98	1.75	1.80	27	.68	.88	1.00	1.80	1.65
13	.....	.78	.98	1.75	1.75	28	.68	.85	1.00	1.80	1.65
14	.....	.78	.98	1.75	1.75	29	.68	.85	1.00	1.80	1.65
15	.....	.78	.98	1.75	1.75	30	.68	.85	1.00	1.80	1.65
						31	.68	.....	1.00	.....	1.65

NOTE.—Rise in gage height Nov. 10 caused by a loose rock dam which was placed across the creek 40 feet below the gage to protect bridge piers.

NORTH FORK OF COTTONWOOD CREEK AT ONO, CAL.

Location.—At the highway bridge near the center of sec. 11, T. 30 N., R. 7 W., one-fourth mile southwest of Ono. Byron Creek enters just above and Eagle Creek one-half mile below the station.

Records available.—October 27, 1907, to December 31, 1911.

Drainage area.—52 square miles.

Gage.—Vertical staff on left face of middle pier of bridge.

Channel.—Gravel and small bowlders and subject to slight change at high stages. Current at angle to bridge in right channel.

Discharge measurements.—Made from downstream side of bridge, except at low water when wading measurements are made about 100 feet below the gage.

Diversions.—Several small ditches divert water from this stream above the station. In September, 1908, these diversions amounted to 14 second-feet.

Accuracy.—Results are good.

Discharge measurements of North Fork of Cottonwood Creek at Ono, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 8[a]	H. D. McGlashan	6.30	813
Oct. 11[b]	J. E. Stewart	4.36	11

[a] Conditions good except for right channel. Gage difficult to read accurately at this stage owing to roughness of water surface.

[b] Made by wading about 50 feet below gage.

Daily gage height, in feet, of North Fork of Cottonwood Creek at Ono, Cal., for 1911.

[F. J. Wheelock, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.70	5.70	5.20	5.65	5.45	5.10	4.75	4.32	4.25	4.38	4.50	4.45
2	4.65	5.70	5.20	5.65	5.45	5.05	4.68	4.30	4.22	4.40	4.45	4.40
3	4.60	5.70	5.50	5.65	5.42	5.05	4.62	4.30	4.28	4.40	4.42	4.40
4	4.62	5.68	6.50	5.72	5.40	5.02	4.65	4.28	4.20	4.40	4.40	4.40
5	4.65	5.62	6.85	5.55	5.40	5.00	4.58	4.25	4.20	4.35	4.40	4.45
6	4.65	5.52	7.75	5.95	5.35	5.00	4.58	4.25	4.22	4.38	4.40	4.78
7	4.65	5.42	6.90	5.85	5.35	5.02	4.58	4.25	4.25	4.35	4.38	4.55
8	4.65	5.40	6.30	5.85	5.35	5.00	4.52	4.25	4.20	4.38	4.40	4.50
9	4.65	5.30	5.95	5.80	5.32	5.00	4.52	4.25	4.22	4.40	4.40	4.45
10	4.60	5.55	5.90	5.80	5.30	5.00	4.52	4.25	4.28	4.35	4.40	4.45
11	4.85	5.58	5.80	5.75	5.30	4.92	4.51	4.25	4.30	4.35	4.40	4.45
12	4.72	5.85	5.80	5.70	5.28	4.92	4.51	4.25	4.30	4.35	4.40	4.45
13	4.78	5.70	5.75	5.65	5.25	4.88	4.51	4.25	4.30	4.35	4.40	4.45
14	4.85	5.50	5.75	5.60	5.25	4.88	4.51	4.25	4.30	4.40	4.40	4.45
15	4.85	5.48	5.70	5.60	5.25	4.88	4.49	4.25	4.30	4.40	4.60	4.45
16	4.80	5.42	5.70	5.55	5.30	4.85	4.49	4.25	4.25	4.50	4.60	4.50
17	4.80	5.38	5.70	5.55	5.35	4.82	4.46	4.25	4.25	4.50	4.50	4.48
18	4.85	5.32	5.70	5.55	5.35	4.82	4.50	4.25	4.25	4.50	4.48	4.45
19	6.75	5.30	5.70	5.52	5.30	4.82	4.45	4.25	4.25	4.45	4.45	4.45
20	5.80	5.30	5.70	5.50	5.30	4.78	4.45	4.25	4.25	4.45	4.45	4.45
21	5.35	5.30	5.70	5.50	5.25	4.78	4.45	4.25	4.25	4.45	4.45	4.45
22	5.20	5.28	5.70	5.50	5.25	4.78	4.45	4.25	4.25	4.45	4.45	4.45
23	5.12	5.25	5.70	5.50	5.25	4.78	4.45	4.22	4.25	4.45	4.45	4.45
24	5.15	5.25	5.70	5.50	5.22	4.78	4.45	4.20	4.25	4.45	4.45	4.45
25	5.15	5.22	5.70	5.50	5.20	4.78	4.45	4.20	4.35	4.48	4.45	4.45
26	5 15	5.20	5.65	5.52	5.20	4.75	4.40	4.20	4.45	4.50	4.45	4.45
27	5.5	5.20	5.65	5.50	5.20	4.72	4.35	4.20	4.40	4.50	4.45	4.52
28	5.95	5.20	5.65	5.50	5.15	4.72	4.35	4.20	4.38	4.50	4.45	4.60
29	5.85	.....	5.65	5.45	5.12	4.72	4.35	4.20	4.35	4.50	4.45	4.60
30	5.80	.....	5.65	5.45	5.10	4.78	4.35	4.20	4.35	4.50	4.45	4.60
31	5.80	.....	5.65	.....	5.10	.....	4.35	4.25	.....	4.50	.....	4.60

Daily discharge, in second-feet, of North Fork of Cottonwood Creek at Ono, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	36	349	143	324	231	115	43	8.8	6.5	11	17	14
2	30	349	143	324	231	102	34	8.0	5.6	12	14	12
3	25	349	252	324	219	102	27	8.0	7.4	12	13	12
4	27	339	950	360	211	95	30	7.4	5.0	12	12	12
5	30	308	1,320	275	211	90	23	6.5	5.0	10	12	14
6	30	261	2,460	501	193	90	23	6.5	5.6	11	12	47
7	30	219	1,380	436	193	95	23	6.5	6.5	10	11	21
8	30	211	770	436	193	90	19	6.5	5.0	11	12	17
9	30	175	501	405	182	90	19	6.5	5.6	12	12	14
10	25	275	467	405	175	90	19	6.5	7.4	10	12	14
11	58	289	405	377	175	72	18	6.5	8.0	10	12	14
12	39	436	405	349	169	72	18	6.5	8.0	10	12	14
13	47	349	377	324	159	64	18	6.5	8.0	10	12	14
14	58	252	377	298	159	64	18	6.5	8.0	12	12	14
15	58	244	349	298	159	64	16	6.5	8.0	12	25	14
16	50	219	349	275	175	59	16	6.5	6.5	17	25	17
17	50	204	349	275	193	54	15	6.5	6.5	17	17	16
18	58	182	349	275	193	54	17	6.5	6.5	17	16	14
19	1,220	175	349	261	175	54	14	6.5	6.5	14	14	14
20	405	175	349	252	175	47	14	6.5	6.5	14	14	14
21	193	175	349	252	159	47	14	6.5	6.5	14	14	14
22	143	169	349	252	159	47	14	6.5	6.5	14	14	14
23	121	159	349	252	159	47	14	5.6	6.5	14	14	14
24	129	159	349	252	149	47	14	5.0	6.5	14	14	14
25	129	149	349	252	143	47	14	5.0	10	16	14	14
26	129	143	324	261	143	43	12	5.0	14	17	14	14
27	252	143	324	252	143	39	10	5.0	12	17	14	19
28	501	143	324	252	129	39	10	5.0	11	17	14	25
29	436	.....	324	231	120	39	10	5.0	10	17	14	25
30	405	.....	324	231	115	47	10	5.0	10	17	14	25
31	405	.....	324	.....	115	.....	10	6.5	.....	17	.....	25

NOTE.—Daily discharge determined from a rating curve well defined below 1,500 second-feet.

Monthly discharge of North Fork of Cottonwood Creek at Ono, Cal., for 1911.

[Drainage area, 52 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	1,220	25	167	3.21	3.70	10,300	A.
February	349	143	236	4.54	4.73	13,100	A.
March	2,460	143	508	9.77	11.26	31,200	A.
April	501	231	309	5.94	6.63	18,400	A.
May	231	115	171	3.29	3.79	10,500	A.
June	115	39	66.7	1.28	1.43	3,970	A.
July	43	10	17.9	.344	.40	1,100	B.
August	8.8	5	6.33	.122	.14	389	C.
September	14	5	7.50	.144	.16	446	C.
October	17	10	13.5	.260	.30	830	B.
November	25	11	14.2	.273	.30	845	B.
December	47	12	16.9	.325	.37	1,040	B.
The year	2,460	5	127	2.44	33.21	92,100	

MILL CREEK NEAR LOS MOLINOS, CAL.

Location.—At suspension footbridge one-fourth mile above Los Molinos Land Co.'s diversion dam, in NE. ¼ sec. 1, T. 25 N., R. 2 W., 4½ miles northeast of Los Molinos, and 5 miles east of Tehama.

Records available.—August 9, 1909 to December 31, 1911.

Drainage area.—173 square miles.

Gage.—Inclined staff on right bank at footbridge.

Channel.—Cemented gravel and small bowlders and permanent.

Discharge measurements.—Made from suspension footbridge at gage and by wading at low stages.

Accuracy.—At medium and high stages the current is very swift. Rating curve is only fairly well defined as measurements are somewhat scattering. Results are believed to be reliable.

Cooperation.—Gage-height record and occasional measurements furnished by the Los Molinos Land Co.

Discharge measurements of Mill Creek near Los Molinos, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 23[a]	J. E. Stewart	0.85	170
Oct. 10[a]	do	.82	157
Oct. 19[a]	G. T. Peekema	.69	123
Dec. 8[a]	do	.69	124

[a] Made by wading at footbridge.

Discharge measurements of Mill Creek near Los Molinos, Cal., in 1909–1911, made by Los Molinos Land Co.'s employees.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1909.			
Oct. 9	Barnes and Wallace	0.86	148
16	....do	.91	141
25	A. Wallace	.90	137
30	Barnes and Wallace	1.02	167
Nov. 6	....do	.98	162
13	....do	1.02	181
27	....do	1.72	349
Dec. 4	....do	1.70	359
11	....do	1.90	467
1910.			
Feb. 23	Barnes and Sayles	1.80	421
June 25	Ricketts and Sayles	.90	185
July 1	....do	.90	166
9	....do	.87	158
10	....do	.87	154
25	Sayles and Jones	.73	148
30	Sayles and Sayles	.70	140
Aug. 20	W. D. Sayles	.65	125
30	....do	.63	129
Sept. 10	....do	.65	129
Oct. 1	....do	.63	129
Nov. 3	....do	.50	134
14	....do	.59	144
22	....do	.72	157
26	....do	1.00	212
Dec. 16	....do	1.10	229
30	....do	.79	154
1911.			
Jan. 17	W. D. Sayles	1.02	196
26	....do	2.20	602

Daily gage height, in feet, of Mill Creek near Los Molinos, Cal., for 1911.

[W. D. Sayles, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.												0.68
2.										0.78	0.68	
3.						2.70						
4.					2.60				0.82	.80	.68	
5.						2.60			.83			
6.									.82	.75	.68	.73
7.					2.30				.81	.74		
8.												.70
9.												
10.						2.55		0.96	.78	.82		
11.							1.65					
12.						2.70						
13.								.92		.73		
14.											.75	.67
15.										.72		
16.												
17.	1.02							.90			.78	
18.												
19.					2.25					.68	.74	
20.						2.50			.74			.67
21.			2.05							.69		
22.					2.50							
23.				2.30				.85	.75		.70	
24.									.74	.70		
25.								.84			.70	
26.	2.20			2.60	2.35	2.00			.88	.72		.67
27.												
28.				2.25					.77	.70	.68	.74
29.								80				
30.						1.96			.75			
31.							1.10			.70		

NOTE.—The highest stage reached during 1911 was about 9 feet, and occurred about Mar. 8.

Daily discharge, in second-feet, of Mill Creek near Los Molinos, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Nov.
1					650	750	472	209	154	147	134	133
2					650	850	462	206	155	149	133	135
3					700	803	452	203	156	150	133	136
4					753	778	442	200	156	152	133	137
5					800	753	432	197	157	148	133	139
6					700	748	422	194	156	144	133	141
7					615	743	412	191	154	142	135	138
8					600	738	402	188	153	146	137	136
9					600	733	392	185	151	151	138	136
10					600	729	383	182	149	156	139	135
11					600	766	374	179	148	151	140	134
12					600	803	365	177	147	146	141	133
13					580	790	356	174	146	141	143	132
14					580	778	348	173	146	140	144	132
15					580	766	340	172	146	139	146	132
16					580	754	332	171	146	138	147	132
17	195				580	742	324	170	145	136	149	132
18					570	730	316	168	144	135	146	132
19					594	718	308	166	143	133	142	132
20					590	705	300	164	142	134	140	132
21			514		640	670	292	163	143	135	139	132
22					705	635	284	162	144	135	138	132
23				615	750	600	276	161	144	136	136	132
24					700	565	268	160	142	136	136	132
25					660	530	260	159	154	138	136	132
26	573			753	637	495	252	157	166	139	135	132
27					610	492	244	156	156	138	134	137
28				594	590	488	236	154	147	136	133	142
29					580	484	228	152	146	136	133	150
30					580	481	220	152	144	136	133	155
31					650		213	153		136		160

NOTE.—Daily discharge determined from a fairly well-defined rating curve; discharge for days on which gage was not read—from May 1 to June 2 and Dec. 29 to 31—estimated from record of discharge of Feather River at Oroville; discharge interpolated June 4 to Dec. 27; estimated and interpolated figures roughly approximate.

Monthly discharge of Mill Creek near Los Molinos, Cal., for 1911.

[Drainage area, 173 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
May	800	570	633	3.66	4.22	38,900	C.
June	850	481	687	3.97	4.43	40,900	C.
July	472	213	336	1.94	2.24	20,700	C.
August	209	152	174	1.01	1.16	10,700	C.
September	166	142	149	.861	.96	8,870	C.
October	156	133	141	.815	.94	8,670	C.
November	149	133	138	.798	.89	8,210	C.
December	160	132	136	.786	.91	8,360	C.
The period						145,000	

DEER CREEK NEAR VINA, CAL.

Location.—2½ miles northeast of the Roberts ranch house, in the NW. ¼ sec. 23, T. 25 N., R. 1 W., about 9½ miles northeast of Vina.

Records available.—October 17 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to a sycamore tree on left bank, one-fourth mile above sheep bridge.

Channel.—Gravel and small bowlders, and appears permanent.

Discharge measurements.—Made from car and cable 100 feet below gage or by wading.

Cooperation.—Maintained in cooperation with Ora Electric Co.

Discharge measurements of Deer Creek near Vina, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 24[a]	J. E. Stewart		156
Oct. 18[b]	G. T. Peekema	2.32	131
Dec. 7[c]	do	2.33	134

[a] Made by wading ¼ mile below location of gage installed Oct. 17.
[b] Made by wading ⅔ mile below gage.
[c] Made by wading 5 feet below gage.

Daily gage height, in feet, of Deer Creek near Vina, Cal., for 1911.

[David Roberts, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1		2.32	2.30	11		2.45	2.30	21	2.32	2.32	2.30
2		2.32	2.30	12		2.35	2.30	22	2.32		2.30
3		2.30	2.30	13		2.32	2.30	23		2.30	2.27
4		2.30	2.30	14		2.35	2.30	24		2.32	2.27
5		2.30	2.30	15		2.37	2.27	25			
6		2.30	2.33	16		2.55	2.27	26		2.30	2.30
7		2.30	2.33	17	2.32	2.40	2.33	27		2.30	2.32
8		2.30	2.30	18	2.32	2.35	2.32	28		2.30	2.33
9		2.32	2.30	19		2.32	2.32	29		2.27	2.32
10		2.42	2.30	20		2.32	2.32	30		2.27	2.27
								31	2.32		2.32

STONY CREEK AND TRIBUTARIES.

STONY CREEK NEAR FRUTO, CAL.

Location.—At Julian ranch, in the NE. ¼ sec. 14, T. 21 N., R. 6 W., 1¼ miles below mouth of Grindstone Creek and about 7 miles northwest of Fruto.

Records available.—January 30, 1901, to December 31, 1911.

Drainage area.—601 square miles.

Gage.—Vertical staff with inclined section for low water.

Channel.—Gravel which shifts at medium and high stages.

Discharge measurements.—Made from car and cable 100 feet below gage or by wading.

Storage.—The East Park reservoir, constructed by the United States Reclamation Service, stores water on Little Stony Creek for use on the Orland project.

Accuracy.—Results at high water are approximate. Otherwise the record is reliable.

Discharge measurements of Stony Creek near Fruto, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 20	J. E. Stewart	7.50	2,960
May 1	do	6.00	686
June 6	M. E. Ready	5.70	507
July 10	do	5.05	121
July 29[a]	do	4.95	126
Aug. 15[a]	do	5.03	124
Oct. 14[b]	J. E. Stewart	4.94	109

[a] Made by wading ½ mile above Julian's ranch. [b] Made by wading 25 feet below the gage.

NOTE.—Measurements June 6 to Aug. 15 made by an engineer of the United States Reclamation Service.

Daily gage height, in feet, of Stony Creek near Fruto, Cal., for 1911.

[Lee Julian, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.5	7.0	6.2	6.95	6.0	5.7	5.0	5.1	5.1	5.0	4.8	4.5
2	4.4	7.1	6.6	7.0	6.1	5.7	5.0	5.1	5.0	5.0	4.8	4.5
3	4.4	7.0	10.4	7.0	6.0	5.7	4.9	5.1	5.0	5.0	4.8	4.5
4	4.4	6.5	11.75	7.0	6.0	5.7	4.9	5.1	5.0	5.0	4.8	4.6
5	4.4	6.2	10.1	7.4	6.0	5.7	4.9	5.1	5.0	5.0	4.7	4.6
6	4.4	5.9	12.6	7.75	5.9	5.7	4.9	5.1	5.0	4.9	4.7	4.6
7	4.4	5.6	10.75	7.2	5.9	5.9	4.9	5.1	5.0	4.9	4.7	4.6
8	4.3	5.4	10.15	7.0	5.8	6.2	4.9	5.1	5.0	4.9	4.5	4.6
9	4.3	5.2	8.6	7.0	5.8	6.0	5.1	5.1	5.0	4.9	4.5	4.6
10	4.3	5.0	7.8	7.0	5.9	6.0	5.1	5.1	5.0	4.9	4.5	4.6
11	4.3	5.2	7.6	7.0	5.9	6.0	5.0	5.1	5.0	4.9	4.6	4.6
12	4.4	5.6	7.5	6.9	5.9	6.0	5.0	5.1	5.0	4.9	4.6	4.6
13	4.5	5.6	7.5	6.8	5.8	5.9	4.9	5.1	5.0	4.9	4.6	4.5
14	4.6	5.5	7.5	6.8	5.8	5.9	4.9	5.1	5.0	4.95	4.6	4.5
15	5.0	5.3	7.65	6.8	5.8	5.8	4.9	5.1	5.0	4.95	4.6	4.5
16	5.0	5.2	7.6	6.7	5.8	5.8	5.0	5.1	5.0	4.9	4.6	4.5
17	5.0	5.2	7.45	6.5	5.8	5.7	5.0	5.1	5.0	4.9	4.7	4.6
18	5.5	5.2	7.5	6.4	5.8	5.6	5.0	5.1	5.0	4.9	4.6	4.6
19	7.25	5.2	7.55	6.3	5.8	5.6	5.0	5.1	5.0	4.9	4.6	4.6
20	7.75	5.2	7.6	6.3	5.8	5.5	5.0	5.1	5.0	4.85	4.6	4.6
21	6.5	5.1	7.8	6.3	5.7	5.5	5.0	5.1	5.0	4.85	4.6	4.6
22	6.0	5.1	7.75	6.3	5.7	5.4	5.0	5.1	5.0	4.8	4.6	4.5
23	6.0	5.1	8.0	6.1	5.7	5.4	5.0	5.1	5.0	4.8	4.6	4.5
24	6.4	5.1	8.0	6.0	5.7	5.4	5.0	5.1	5.0	4.8	4.6	4.5
25	6.2	5.0	8.0	5.9	5.7	5.3	5.0	5.1	5.0	4.8	4.6	4.5
26	6.3	5.0	7.75	6.0	5.7	5.3	5.0	5.1	5.0	4.8	4.6	4.5
27	6.5	5.0	7.3	6.2	5.8	5.3	5.0	5.1	5.0	4.8	4.6	4.5
28	7.25	5.45	7.1	6.1	5.8	5.2	5.0	5.1	5.0	4.8	4.5	4.6
29	7.9	.....	6.65	6.0	5.8	5.2	5.0	5.1	5.0	4.8	4.5	4.6
30	7.2	.....	6.95	6.0	5.7	5.1	5.0	5.1	5.0	4.8	4.5	4.6
31	7.35	.....	7.1	.....	5.7	.....	5.0	5.1	.....	4.8	.....	4.6

Daily discharge, in second-feet, of Stony Creek near Fruto, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	118	2,210	1,220	1,650	690	465	125	161	161	125	68	15
2	93	2,340	1,710	1,710	770	465	125	161	125	125	68	15
3	93	2,210	8,760	1,710	690	465	95	161	125	125	68	15
4	93	1,580	12,500	1,710	690	465	95	161	125	125	68	27
5	93	1,220	8,040	2,250	690	465	95	161	125	125	45	27
6	93	940	15,400	2,790	610	465	95	161	125	95	45	27
7	93	695	9,620	1,960	610	610	95	161	125	95	45	27
8	72	550	8,020	1,710	535	860	95	161	125	95	15	27
9	72	425	4,330	1,710	535	690	161	161	125	95	15	27
10	72	315	2,870	1,710	610	690	161	161	125	95	15	27
11	72	425	2,550	1,710	610	690	125	161	125	95	27	27
12	93	695	2,400	1,590	610	690	125	161	125	95	27	27
13	118	695	2,400	1,480	535	610	95	161	125	95	27	15
14	145	620	2,400	1,480	535	610	95	161	125	110	27	15
15	315	485	2,630	1,480	535	535	95	161	125	110	27	15
16	315	425	2,550	1,370	535	535	125	161	125	95	27	15
17	315	425	2,320	1,150	535	465	125	161	125	95	45	27
18	620	425	2,400	1,050	535	405	125	161	125	95	27	27
19	2,560	425	2,480	950	535	405	125	161	125	95	27	27
20	3,360	425	2,550	950	535	350	125	161	125	82	27	27
21	1,580	370	2,870	950	465	350	125	161	125	82	27	27
22	1,030	370	2,790	950	465	300	125	161	125	68	27	15
23	1,030	370	3,200	770	465	300	125	161	125	68	27	15
24	1,460	370	3,200	690	465	300	125	161	125	68	27	15
25	1,220	315	3,200	610	465	250	125	161	125	68	27	15
26	1,340	315	2,790	690	465	250	125	161	125	68	27	15
27	1,580	315	2,100	860	535	250	125	161	125	68	27	15
28	2,560	585	1,830	770	535	203	125	161	125	68	15	27
29	3,610	.....	1,320	690	535	203	125	161	125	68	15	27
30	2,490	.....	1,650	690	465	161	125	161	125	68	15	27
31	2,720	.....	1,830	.....	465	.....	125	161	.....	68	.....	27

NOTE.—Daily discharge determined from two rating curves fairly well defined except at extreme high and extreme low stages. The change in rating was made Mar. 7.

Monthly discharge of Stony Creek near Fruto, Cal., for 1911.

[Drainage area, 601 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	3,610	72	949	1.58	1.82	58,400	C.
February	2,340	315	734	1.22	1.27	40,800	C.
March	15,400	1,220	4,000	6.66	7.68	246,000	C.
April	2,790	610	1,330	2.21	2.47	79,100	B.
May	770	465	557	.927	1.07	34,200	B.
June	860	161	450	.749	.84	26,800	B.
July	161	95	119	.198	.23	7,320	B.
August	161	161	161	.268	.31	9,900	B.
September	161	125	126	.210	.23	7,500	B.
October	125	68	91.2	.152	.18	5,610	B.
November	68	15	32.5	.054	.06	1,930	C.
December	27	15	22.0	.037	.04	1,350	C.
The year	15,400	15	716	1.19	16.20	519,000	

LITTLE STONY CREEK NEAR LODOGA, CAL.

Location.—At East Park reservoir, 4 miles above junction with Stony Creek and 3½ miles northwest of Lodoga.

Records available.—January 1, 1908, to December 31, 1911.

Drainage area.—102 square miles.

Gage.—Previous to December 1, 1910, the station was maintained a short distance below the present site. Several gages with independent datums were used. Beginning with December 1, 1910, the record is from the gage at the dam.

Discharge.—Computed from gage heights observed at the dam. Correction has been made for evaporation, which is determined from records obtained from an evaporation pan at the reservoir.

Accuracy.—Considerable care is used in collecting these data and results should be good.

Cooperation.—Record furnished by United States Reclamation Service through A. N. Burch, acting project engineer.

Daily gage height, in feet, of East Park reservoir near Lodoga, Cal., for 1911.

[J. Lea, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	20.4	56.4	67.1	75.6	80.6	82.3	82.6	79.2	73.6	67.8	63.1	62.5
2	20.5	58.0	67.4	75.9	80.7	82.4	82.6	79.0	73.5	67.6	63.0	62.5
3	20.6	59.1	68.5	76.1	80.8	82.4	82.6	78.8	73.3	67.4	62.9	62.5
4	20.7	60.0	72.4	76.3	80.9	82.4	82.6	78.7	73.1	67.2	62.8	62.6
5	20.8	60.8	76.3	76.6	81.0	82.5	82.5	78.5	72.9	67.0	62.7	62.6
6	20.9	61.3	80.2	77.0	81.0	82.5	82.5	78.3	72.7	66.8	62.7	62.6
7	21.0	61.8	85.8	77.4	81.1	82.5	82.5	78.1	72.5	66.6	62.6	62.6
8	21.1	62.2	85.9	77.7	81.2	82.6	82.4	78.0	72.3	66.4	62.6	62.6
9	21.2	62.5	85.2	77.9	81.3	82.6	82.3	77.8	72.1	66.3	62.6	62.6
10	21.3	62.7	84.9	78.1	81.3	82.6	82.2	77.6	71.9	66.0	62.6	62.6
11	21.6	63.5	84.5	78.3	81.4	82.6	82.1	77.5	71.7	65.9	62.6	62.6
12	23.5	63.7	83.9	78.5	81.4	82.7	82.0	77.3	71.5	65.8	62.6	62.6
13	24.3	64.2	83.4	78.7	81.5	82.7	81.9	77.1	71.3	65.6	62.6	62.6
14	24.9	64.5	83.3	78.8	81.6	82.7	81.8	76.9	71.1	65.4	62.6	62.6
15	25.6	64.8	82.9	78.9	81 6	82.7	81.7	76.8	70.9	65.3	62.5	62.6

Daily gage height, in feet, of East Park reservoir near Lodoga, Cal., for 1911—Contd.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
16	26.2	65.1	82.4	79.1	81.6	82.7	81.6	76.6	70.7	65.1	62.5	62.6
17	26.5	65.3	81.9	79.2	81.7	82.7	81.5	76.4	70.5	64.9	62.5	62.6
18	27.1	65.5	81.4	79.3	81.7	82.7	81.3	76.2	70.3	64.7	62.5	62.6
19	28.4	65.7	80.7	79.4	81.8	82.7	81.2	76.0	70.1	64.6	62.5	62.6
20	36.0	65.9	79.8	79.5	81.8	82.7	81.0	75.8	69.9	64.4	62.5	62.6
21	37.7	66.0	79.0	79.6	81.9	82.7	80.9	75.7	69.7	64.3	62.5	62.6
22	38.1	66.1	78.3	79.7	81.9	82.7	80.7	75.5	69.5	64.2	62.5	62.6
23	38.4	66.3	77.6	79.8	82.0	82.7	80.6	75.3	69.3	64.0	62.5	62.6
24	38.9	66.4	76.9	79.9	82.0	82.7	80.4	75.1	69.1	63.9	62.5	62.6
25	40.0	66.5	76.1	80.0	82.1	82.6	80.3	74.9	68.9	63.8	62.5	62.6
26	41.0	66.6	75.2	80.1	82.1	82.6	80.1	74.7	68.7	63.7	62.5	62.6
27	41.8	66.7	74.9	80.2	82.2	82.6	80.0	74.5	68.6	63.6	62.5	62.6
28	45.6	66.9	74.9	80.3	82.2	82.6	79.8	74.3	68.4	63.5	62.5	62.7
29	50.3	.....	75.0	80.4	82.2	82.6	79.7	74.2	68.2	63.4	62.5	62.7
30	53.4	.....	75.2	80.5	82.3	82.6	79.5	74.0	68.0	63.3	62.5	62.7
31	55.3	.....	75.4	.....	82.3	.....	79.4	73.8	.....	63.2	.....	62.7

Daily discharge, in second-feet, of Little Stony Creek near Lodoga, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3	396	100	106	80	44	18	16	11	7	2	6
2	3	599	150	217	78	46	20	16	10	7	2	6
3	4	421	575	136	78	48	18	16	10	7	2	6
4	3	351	2,220	136	78	48	18	17	10	7	2	7
5	3	362	2,580	224	90	49	18	17	11	7	2	7
6	3	237	2,820	290	40	44	18	14	11	7	2	7
7	3	227	4,980	282	40	47	18	16	11	7	2	7
8	2	186	2,450	217	78	44	16	16	11	7	3	7
9	3	141	1,450	144	78	46	16	16	11	7	3	7
10	3	91	1,250	152	40	44	18	14	11	7	3	7
11	8	378	935	144	40	44	18	16	10	7	3	7
12	57	101	800	146	46	44	17	16	11	7	3	7
13	31	232	760	152	46	15	15	16	11	7	3	7
14	30	146	700	71	78	17	17	16	10	7	3	7
15	34	141	675	68	31	17	17	16	11	7	3	7
16	30	146	600	152	31	20	19	16	11	7	3	7
17	30	96	600	76	32	20	16	16	11	5	3	7
18	32	101	600	73	40	20	14	15	11	5	3	6
19	80	96	575	88	40	20	17	17	11	5	3	6
20	709	93	545	83	40	20	17	15	11	5	3	6
21	230	50	525	88	40	17	17	15	9	5	3	6
22	59	50	550	83	46	17	17	11	9	5	3	6
23	43	101	500	88	46	20	17	11	9	5	3	6
24	71	50	500	75	40	20	17	11	9	2	3	6
25	164	50	425	68	40	20	14	9	9	2	3	6
26	181	50	400	78	40	13	16	11	9	2	3	6
27	146	50	375	90	40	11	16	11	9	2	3	6
28	760	101	300	75	31	11	16	10	8	2	3	6
29	1,140	.....	235	73	31	18	16	10	7	2	3	6
30	907	.....	200	83	32	18	14	11	7	2	3	6
31	637	.....	150	.....	31	.....	14	11	.....	2	.....	6

NOTE.—Daily discharge based on the water-surface elevation of East Park reservoir, the daily accumulation, and the evaporation loss. On account of the extreme water-tightness of the storage basin, seepage losses were assumed to be negligible.

Monthly discharge of Little Stony Creek near Lodoga, Cal., for 1911.

[Drainage area, 102 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
January	1,140	2	174	1.71	1.97	10,700
February	599	50	180	1.76	1.83	10,000
March	4,980	100	952	9.33	10.76	58,500
April	290	68	125	1.23	1.37	7,440
May	90	31	49.1	.481	.55	3,020
June	49	11	28.7	.281	.31	1,710
July	20	14	16.7	.164	.19	1,030
August	17	9	14.1	.138	.16	867
September	11	7	10.0	.098	.11	595
October	7	2	5.3	.052	.06	326
November	3	2	2.8	.028	.03	167
December	7	6	6.5	.063	.07	400
The year	4,980	2	131	1.28	17.41	94,800

FEATHER RIVER AND TRIBUTARIES.

FEATHER RIVER AT OROVILLE, CAL.

Location.—At highway bridge at Oroville, in sec. 8, T. 19 N., R. 4 E., 6 miles below junction of North and Middle Forks and 30 miles above the mouth of Yuba River.

Records available.—January 1, 1902, to December 31, 1911.

Drainage area.—3,640 square miles.

Gage.—United States Weather Bureau vertical staff gage on pier of highway bridge on right bank. This station was maintained at bridge from 1902 to 1905. In December, 1905, a gage was installed on the left bank about 1,000 feet upstream. Gage heights for 1906–1910 were referred to this gage. The Weather Bureau gage was read during 1911.

Channel.—Somewhat shifting at high stages.

Discharge measurements.—Made from car and cable 1,000 feet above bridge.

Accuracy.—Discharge rating curves for 1911 are good. Daily and monthly discharges are withheld, however, pending the verifications of the gage heights for the latter part of the year.

Cooperation.—Gage-height record furnished by United States Weather Bureau through N. R. Taylor, local forecaster.

Discharge measurements of Feather River at Oroville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 26	J. E. Stewart	6.15	10,800
30	do	a 11.50	57,300
30	do	a 11.72	58,900
31	do	12.80	67,400
Mar. 24	do	7.68	20,700
May 26	do	7.52	18,200
July 11	do	4.01	4,730
Oct. 6	do	1.70	1,960

a Gage height obtained from relation curve for the two gages based on simultaneous readings made during 1910 and 1911.

Note.—Gage heights referred to Weather Bureau gage ¼ mile below United States Geological Survey gage

Daily gage height, in feet, of Feather River at Oroville, Cal., for 1911.

[U. S. Weather Bureau, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.6	9.6	4.1	9.3	8.0	7.7	4.9	2.0	1.0	0.9	1.0	1.0
2	1.6	8.3	4.6	9.8	8.0	8.0	4.7	1.9	1.0	1.0	1.2	1.0
3	1.6	8.1	4.6	10.0	8.0	8.1	4.7	1.9	1.1	1.0	1.2	1.0
4	1.6	7.2	5.8	10.0	8.7	8.1	4.6	1.8	1.0	1.0	1.3	1.0
5	1.6	6.8	6.1	10.2	9.1	8.0	4.5	1.8	1.0	1.1	1.2	.9
6	1.6	6.4	7.1	12.4	9.0	8.0	4.4	1.7	1.1	1.0	1.4	1.1
7	1.6	6.2	10.2	10.9	8.5	8.0	4.3	1.7	1.1	1.0	.7	1.1
8	1.5	5.9	8.3	10.0	8.2	8.0	4.2	1.7	1.1	1.0	.8	1.2
9	1.5	5.6	7.3	9.7	8.0	7.6	4.0	1.6	1.1	1.3	1.0	1.1
10	2.0	5.5	6.9	9.6	7.9	7.6	4.0	1.6	1.0	1.3	2.0	1.2
11	2.1	6.3	6.5	8.8	7.9	7.6	3.8	1.6	1.0	1.2	2.3	1.1
12	2.5	5.6	6.2	8.1	8.0	7.6	3.6	1.6	1.0	1.1	1.6	1.1
13	3.5	6.0	6.0	7.6	8.1	7.5	3.5	1.4	1.1	1.0	1.5	1.1
14	4.8	5.5	5.9	7.3	8.0	7.5	3.4	1.3	1.1	1.1	1.6	1.1
15	4.1	5.2	5.9	7.0	7.9	7.2	3.3	1.3	1.1	1.0	1.5	1.2
16	2.8	4.9	5.9	7.0	7.8	7.0	3.2	1.5	1.2	1.0	2.0	1.2
17	2.4	4.8	6.0	7.2	7.5	7.0	3.2	1.3	1.1	1.0	1.6	1.4
18	2.2	4.8	6.1	7.5	7.4	6.9	3.2	1.3	1.0	1.0	1.5	1.3
19	2.0	4.7	6.2	8.0	7.6	6.8	3.0	1.3	1.0	.9	1.5	1.3
20	7.4	4.6	6.4	8.0	7.5	6.6	3.0	1.5	.9	.8	1.7	1.3
21	5.1	4.6	6.6	8.0	7.6	6.5	2.8	1.5	.9	.8	1.4	1.2
22	4.9	4.4	7.0	8.1	8.0	6.1	2.7	1.4	1.0	1.2	1.3	1.3
23	4.3	4.4	7.2	8.5	8.3	5.8	2.5	1.3	1.0	1.0	1.3	1.3
24	6.2	4.4	7.7	9.0	8.4	5.6	2.5	1.3	1.1	1.5	1.3	1.3
25	7.8	4.3	7.8	9.5	8.0	5.4	2.5	1.6	1.0	1.2	1.1	1.2
26	6.8	4.2	7.7	9.8	7.7	5.4	2.3	1.2	.9	1.2	1.3	1.2
27	5.8	4.1	7.7	9.5	7.6	5.3	2.3	1.2	1.5	1.1	1.2	1.2
28	7.3	4.0	7.8	9.0	7.6	5.1	2.2	1.1	1.0	1.1	1.0	1.4
29	6.2	.....	8.1	8.3	7.7	5.0	2.1	1.1	1.0	1.1	1.0	1.4
30	9.2	.....	8.6	8.0	7.7	5.0	2.0	1.1	1.1	1.1	1.2	1.4
31	13.3	.....	9.0	.....	7.9	.....	2.0	1.0	.....	1.2	.....	1.5

NOTE.—Gage heights from about August to December liable to error.

Daily discharge, in second-feet, of Feather River at Oroville, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,750	35,900	4,880	33,200	22,000	19,900	6,680	2,100	1,270	1,200	1,270	1,270
2	1,750	24,400	5,930	37,700	22,000	22,000	6,170	2,010	1,270	1,270	1,430	1,270
3	1,750	22,800	5,930	39,500	22,000	22,800	6,170	2,010	1,350	1,270	1,430	1,270
4	1,750	17,000	9,580	39,500	27,800	22,800	5,930	1,920	1,270	1,270	1,510	1,270
5	1,750	14,600	10,900	41,500	31,400	22,000	5,700	1,920	1,270	1,350	1,430	1,200
6	1,750	12,400	16,400	65,100	30,500	22,000	5,480	1,830	1,350	1,270	1,590	1,350
7	1,750	11,400	41,500	48,500	26,200	22,000	5,270	1,830	1,350	1,270	1,060	1,350
8	1,670	10,000	24,400	39,500	23,600	22,000	5,070	1,830	1,350	1,270	1,130	1,430
9	1,670	8,800	17,500	36,800	22,000	19,300	4,700	1,750	1,350	1,510	1,270	1,350
10	2,100	8,450	15,200	35,900	21,200	19,300	4,700	1,750	1,270	1,510	2,100	1,430
11	2,200	11,900	13,000	28,700	21,200	19,300	4,360	1,750	1,270	1,430	2,420	1,350
12	2,640	8,800	11,400	22,800	22,000	19,300	4,050	1,750	1,270	1,350	1,750	1,350
13	3,900	10,400	10,400	19,300	22,800	18,700	3,900	1,590	1,350	1,270	1,670	1,350
14	6,420	8,450	10,000	17,500	22,000	18,700	3,760	1,510	1,350	1,350	1,750	1,350
15	4,880	7,520	10,000	15,800	21,200	17,000	3,620	1,510	1,350	1,270	1,670	1,430
16	2,990	6,680	10,000	15,800	20,600	15,800	3,490	1,670	1,430	1,270	2,100	1,430
17	2,530	6,420	10,400	17,000	18,700	15,800	3,490	1,510	1,350	1,270	1,750	1,590
18	2,310	6,420	10,900	18,700	18,100	15,200	3,490	1,510	1,270	1,270	1,670	1,510
19	2,100	6,170	11,400	22,000	19,300	14,600	3,230	1,510	1,270	1,200	1,670	1,510
20	18,100	5,930	12,400	22,000	18,700	13,500	3,230	1,670	1,200	1,130	1,830	1,510
21	7,230	5,930	13,500	22,000	19,300	13,000	2,990	1,670	1,200	1,130	1,590	1,430
22	6,680	5,480	15,800	22,800	22,000	10,900	2,870	1,590	1,270	1,430	1,510	1,510
23	5,210	5,480	17,000	26,200	24,400	9,580	2,640	1,510	1,270	1,270	1,510	1,510
24	11,400	5,480	19,900	30,500	25,300	8,800	2,640	1,510	1,350	1,670	1,510	1,510
25	20,600	5,270	20,600	35,000	22,000	8,130	2,640	1,750	1,270	1,430	1,350	1,430

Daily discharge, in second-feet, of Feather River at Oroville, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
26	14,600	5,070	19,900	37,700	19,900	8,130	2,420	1,430	1,200	1,430	1,510	1,430
27	9,580	4,880	19,900	35,000	19,300	7,820	2,420	1,430	1,670	1,350	1,430	1,430
28	17,500	4,700	20,600	30,500	19,300	7,230	2,310	1,350	1,270	1,350	1,270	1,590
29	11,400	.....	22,800	24,400	19,900	6,950	2,200	1,350	1,270	1,350	1,270	1,590
30	32,300	.....	27,000	22,000	19,900	6,950	2,100	1,350	1,350	1,350	1,430	1,590
31	75,400	.....	30,500	.....	21,200	.....	2,100	1,270	.....	1,430	.....	1,670

NOTE.—Daily discharge determined from a rating curve based on discharge measurements made during 1910 to 1912, and which is well defined above a discharge of 3,000 second-feet, and fairly well defined below that discharge. Daily discharges for August to December are believed to be too low because of regulation of the flow at Big Bend. They are also believed to be in error because of poor gage reading at low stages.

Monthly discharge of Feather River at Oroville, Cal., for 1911.

[Drainage area, 3,640 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	75,400	1,670	8,960	2.46	2.84	551,000	A.
February	35,900	4,700	10,200	2.80	2.92	566,000	A.
March	41,500	4,880	15,800	4.34	5.00	972,000	A.
April	65,100	15,800	30,100	8.27	9.23	1,790,000	A.
May	31,400	18,100	22,100	6.07	7.00	1,360,000	A.
June	22,800	6,950	15,600	4.29	4.79	928,000	A.
July	6,680	2,100	3,870	1.06	1.22	238,000	B.
August	2,100	1,270	1,650	.453	.52	101,000	D.
September	1,670	1,200	1,310	.360	.40	78,000	C.
October	1,670	1,130	1,330	.365	.42	81,800	C.
November	2,420	1,060	1,560	.429	.48	92,800	B.
December	1,670	1,200	1,430	.393	.45	87,900	B.
The year	75,400	1,060	9,470	2.60	35.27	6,850,000	

INDIAN CREEK NEAR CRESCENT MILLS, CAL.

Location.—At the lower end of Indian Valley, in the SW. ¼ sec. 25, T. 26 N., R. 9 E., about 2,000 feet below Arlington Bridge, and 1¼ miles below Crescent Mills. Spanish Creek enters 4 miles below the station.

Records available.—January 1, 1906, to December 31, 1909, and September 10 to December 31, 1911.

Drainage area.—740 square miles.

Gage.—Vertical staff in two sections on right bank opposite observer's house.

Channel.—Fairly permanent. At low stages water is deep and sluggish at gage.

Discharge measurements.—Made from Arlington Bridge or by wading. The car and cable at the gage were destroyed by the flood of 1907.

Diversions.—Water is diverted from Indian Creek to irrigate Indian and Genesee valleys.

Accuracy.—Results are good.

Discharge measurements of Indian Creek near Crescent Mills, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 10[a]	H. D. McGlashan	1.38	57
Oct. 23[b]	G. T. Peekema	1.57	85

[a] Measurement made by wading 400 feet below gage.
[b] Measurement made by wading 300 feet below gage.

Daily gage height, in feet, and discharge, in second-feet, of Indian Creek near Crescent Mills, Cal., for 1911.

[Eugene Cook, observer.]

Day.	September.		October.		November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	1.45	67	1.60	89	1.90	137
2	.....	.....	1.45	67	1.60	89	1.90	137
3	.....	.....	1.45	67	1.60	89	1.90	137
4	.....	.....	1.50	74	1.60	89	1.90	137
5	.....	.....	1.55	82	1.60	89	1.90	137
6	.....	.....	1.60	89	1.60	89	1.90	137
7	.....	.....	1.60	89	1.65	96	1.90	137
8	.....	.....	1.60	89	1.70	104	1.90	137
9	.....	.....	1.60	89	1.70	104	1.90	137
10	1.38	57	1.55	82	2.00	155	1.85	128
11	1.38	57	1.55	82	2.00	155	1.85	128
12	1.38	57	1.55	82	1.95	146	1.85	128
13	1.38	57	1.55	82	1.95	146	1.80	120
14	1.38	57	1.55	82	2.00	155	1.80	120
15	1.35	54	1.55	82	2.10	174	1.80	120
16	1.35	54	1.55	82	2.15	184	1.80	120
17	1.35	54	1.55	82	2.20	194	1.80	120
18	1.35	54	1.55	82	2.20	194	1.80	120
19	1.30	47	1.55	82	2.15	184	1.80	120
20	1.30	47	1.55	82	2.10	174	1.80	120
21	1.30	47	1.55	82	2.05	164	1.80	120
22	1.30	47	1.55	82	2.00	155	1.80	120
23	1.30	47	1.55	82	2.00	155	1.80	120
24	1.35	54	1.55	82	2.00	155	1.75	112
25	1.35	54	1.55	82	1.95	146	1.75	112
26	1.40	60	1.55	82	1.95	146	1.75	112
27	1.45	67	1.55	82	1.90	137	1.75	112
28	1.45	67	1.55	82	1.90	137	1.75	112
29	1.45	67	1.60	89	1.90	137	1.75	112
30	1.45	67	1.60	89	1.90	137	1.75	112
31	.....	.....	1.60	89	.....	.....	1.75	112

NOTE.—Daily discharge determined from a fairly well-defined rating curve.

Monthly discharge of Indian Creek near Crescent Mills, Cal., for 1911.

[Drainage area, 740 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
Sept. 10–30	67	47	55.8	0.075	0.06	2,320	B.
October	89	67	81.9	.111	.13	5,040	B.
November	194	89	139	.188	.21	8,270	B.
December	137	112	124	.168	.19	7,620	B.

SPANISH CREEK AT KEDDIE, CAL.

Location.—At highway bridge at Keddie, in the SW. ¼ sec. 22, T. 25 N., R. 9 E, 2 miles above junction with Indian Creek.
Records available.—October 22 to December 31, 1911.
Drainage area.—Not measured.
Gage.—High-water section painted on left abutment of bridge. A vertical section for low water is fastened to a stump on left bank 20 feet below bridge.
Channel.—Gravel.
Discharge measurements.—Made from downstream side of bridge or by wading.
Diversions.—Water is diverted from Spanish Creek to irrigate American Valley.

The following discharge measurement was made by G. T. Peekema by wading 70 feet below the gage:

October 22, 1911: Gage height, 1.71 feet; discharge, 69 second-feet.

Daily gage height, in feet, of Spanish Creek at Keddie, Cal., for 1911.

[R. F. Koonter, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	1.71	1.78	11	.....	1.76	1.78	21	.....	1.82	1.78
2	.....	1.71	1.78	12	.....	1.78	1.78	22	1.71	1.75	1.78
3	.....	1.71	1.78	13	.....	1.81	1.80	23	1.71	1.74	1.78
4	.....	1.71	1.80	14	.....	1.86	1.79	24	1.70	1.72	1.79
5	.....	1.72	1.80	15	.....	1.88	1.78	25	1.70	1.73	1.79
6	.....	1.72	1.81	16	.....	1.91	1.78	26	1.71	1.76	1.80
7	.....	1.72	1.83	17	.....	1.90	1.80	27	1.71	1.77	1.80
8	.....	1.73	1.81	18	.....	1.88	1.80	28	1.70	1.77	1.82
9	.....	1.73	1.80	19	.....	1.85	1.79	29	1.71	1.78	1.82
10	.....	1.75	1.80	20	.....	1.84	1.79	30	1.72	1.77	1.80
								31	1.72	.....	1.81

MIDDLE FORK OF FEATHER RIVER AT CROMBERG, CAL.

Location.—At California White Pine Co.'s log chute, in the N. ½ sec. 24, T. 23 N., R. 11 E., 600 feet southwest of post office at Cromberg, in Plumas National Forest. Jamison Creek enters 4 miles above and Jackson Creek one-half mile below the station.
Records available.—November 3, 1910, to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff on pier of log chute.
Channel.—Gravel and cobblestones.
Discharge measurements.—Car and cable 200 feet above gage or by wading.
Cooperation.—Gage-height record furnished by United States Forest Service.

Estimates are withheld until additional measurements are secured.

The following discharge measurement was made by G. T. Peekema by wading 1,500 feet below the gage:

October 28, 1911: Gage height, 2.54 feet; discharge, 89 second-feet.

Daily gage height, in feet, of Middle Fork of Feather River at Cromberg, Cal., for 1911.

[J. E. Nail, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1				10.3							2.6	
2										2.6	2.6	
3				10.8						2.6		2.9
4				10.5					2.5	2.6	2.6	2.9
5		5.1		10.45					2.5		2.6	2.9
6			4.0	11.0						2.6	2.6	2.9
7				13.0			4.0			2.6	2.6	2.9
8		4.0					4.0	3.05	2.5	2.6		2.9
9			4.2				4.0	3.05	2.5	2.6		2.85
10									2.5			2.85
11						5.3		2.95		2.6		
12			4.1	7.0		5.3		2.95			2.7	
13		3.2					3.9				2.7	
14									2.5			
15			4.2						2.5			
16			4.2		6.0		3.85					2.85
17												2.85
18									2.5			2.85
19									2.5			2.85
20		2.85			5.25			2.9	2.5			
21							3.2	2.9		2.6		
22			6.4				3.2	2.85	2.5			2.8
23									2.5			2.8
24	5.4	2.75	7.5								2.9	
25			7.8				3.2	2.6	2.5	2.6	2.9	
26			8.0					2.6		2.6	2.9	
27			8.3					2.6	2.55	2.6	2.9	
28		2.55	8.5			4.5	3.1		2.6			
29			9.3			4.5			2.6		2.9	
30	6.2		10.0							2.6	2.9	
31			10.0		5.8					2.6		

MIDDLE FORK OF FEATHER RIVER NEAR OROVILLE, CAL.

Location.—At highway bridge at Bidwell Bar, in the NW. ¼ sec. 32, T. 26 N., R. 5 E., 2 miles above junction with the North Fork and 7 miles northeast of Oroville. South Fork enters 1¼ miles above and Canyon Creek three-fourths of a mile below the station.

Records available.—October 7 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in three sections: High-water section is fastened to lower end of bridge pier near left bank. Remainder of gage is fastened to a sycamore tree on left bank 100 feet above bridge.

Channel.—Bowlders and gravel.

Discharge measurements.—Made from car and cable one-half mile below bridge.

The following discharge measurement was made by F. C. Ebert:

December 15, 1911: Gage height, 2.90 feet; discharge, 368 second-feet.

Daily gage height, in feet, of Middle Fork of Feather River near Oroville, Cal., for 1911.

[T. W. Curry, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1		2.8	2.9	11	2.9	3.8	2.95	21	2.7	3.1	2.82
2		2.75	2.9	12	2.85	3.25	2.95	22	2.75	3.0	2.72
3		2.75	2.9	13	2.85	3.15	2.85	23	2.75	3.0	2.82
4		2.8	2.9	14	2.8	3.0	2.85	24	2.7	3.0	2.92
5		2.8	2.9	15	2.8	3.05	2.85	25	2.7	3.0	2.70
6		2.8	2.9	16	2.75	3.2	2.88	26	2.8	3.0	2.65
7	2.8	2.8	2.95	17	2.75	3.25	3.02	27	2.9	3.0	2.70
8	2.8	2.8	2.95	18	2.75	3.1	2.92	28	2.8	2.95	3.10
9	2.9	2.85	2.95	19	2.7	3.15	2.85	29	2.8	2.95	2.95
10	2.9	4.6	2.9	20	2.7	3.1	2.85	30	2.8	2.95	2.92
								31	2.8		2.92

SOUTH FORK OF FEATHER RIVER AT ENTERPRISE, CAL.

Location.—One-half mile above highway bridge at Enterprise, in the NE. ¼ sec. 1, T. 19 N., R. 6 E., and about 700 feet above mouth of McCabe Creek.
Records available.—October 8 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff in two sections on left bank one-half mile above bridge.
Channel.—Gravel and small bowlders.
Discharge measurements.—Made from bridge below gage or by wading.
Diversions.—The diversion dam of the Palermo Land & Water Co.'s canal is located 1 mile above the station. The canal record must be added to obtain the total run-off from this drainage.

Discharge measurements of South Fork of Feather River at Enterprise, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 8[a]	J. E. Stewart	0.87	6.0
Dec. 17[b]	F. C. Ebert	1.40	44

[a] Made by wading below highway bridge, one-quarter mile below gage.
[b] Made by wading 300 feet below gage.

Daily gage height, in feet, of South Fork of Feather River at Enterprise, Cal., for 1911.

[Gus Alm, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	1.1	1.3	11	1.1	1.65	1.2	21	0.75	1.3	1.32
2	.....	1.0	1.3	12	1.05	1.4	1.2	22	.75	1.3	1.35
3	.....	1.0	1.3	13	1.05	1.3	1.2	23	.75	1.3	1.35
4	.....	1.1	1.2	14	1.05	1.3	1.2	24	.75	1.3	1.32
5	.....	1.1	1.2	15	1.0	1.3	1.2	25	.85	1.3	1.32
6	.....	1.05	1.2	16	1.0	1.6	1.49	26	1.0	1.3	1.32
7	.....	1.05	1.2	17	1.0	1.45	1.33	27	1.2	1.3	1.43
8	0.85	1.05	1.2	18	.95	1.35	1.31	28	1.2	1.3	1.49
9	1.0	1.05	1.2	19	.75	1.25	1.31	29	1.2	1.3	1.49
10	1.2	2.4	1.2	20	.75	1.2	1.31	30	1.2	1.3	1.45
								31	1.1	.....	1.51

PALERMO LAND & WATER CO.'S CANAL AT ENTERPRISE, CAL.

Location.—Above footbridge, in the NE. ¼ sec. 1, T. 19 N., R. 6 E., at Enterprise.
Records available.—October 8 to December 31, 1911.
Gage.—Vertical staff fastened to post on right bank 15 feet above footbridge.
Channel.—Gravel and sand.
Discharge measurements.—Made from footbridge or by wading.

This canal furnishes water for irrigation below Oroville.

Discharge measurements of Palermo Land & Water Co.'s canal at Enterprise, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 8[a]	J. E. Stewart	1.30	37
Dec. 17[b]	F. C. Ebert	.36	12

[a] Made by wading 10 feet below gage.
[b] Made from footbridge 15 feet below gage.

Daily gage height, in feet, of Palermo Land & Water Co.'s canal at Enterprise, Cal., for 1911.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	0.95	0.7	11	1.05	0.9	0.7	21	1.3	0.7	0.39
2	.....	.95	.7	12	1.15	.9	.7	22	1.3	.7	.39
3	.....	.95	.7	13	1.1	.9	.7	23	1.3	.7	.43
4	.....	.95	.7	14	.95	.9	.7	24	1.3	.7	.42
5	.....	.95	.7	15	1.05	.9	.7	25	1.3	.7	.51
6	.....	.95	.7	16	1.05	.9	.7	26	1.3	.7	.62
7	.....	.95	.7	17	1.05	.9	.36	27	1.2	.7	.52
8	1.3	.95	.7	18	1.05	.9	.40	28	1.1	.7	.45
9	1.3	1.0	.7	19	1.3	.9	.40	29	1.0	.7	.45
10	1.2	1.0	.7	20	1.3	.7	.40	30	1.0	.7	.43
								31	.95	.....	.43

MIDDLE FORK OF YUBA RIVER [1] NEAR NORTH SAN JUAN, CAL.

Location.—Below highway bridge at Freemans Bridge, in the N. ½ NW. ¼ sec. 23, T. 18 N., R. 8 E., in the Tahoe National Forest, 1¼ miles northeast of North San Juan in Tahoe National Forest. Oregon Creek enters three-fourths mile above, Moonshine Creek one-fourth mile below, and North Fork of Yuba River about 4 miles below the station.

Records available.—October 27, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff wedged between two large bowlders on right bank one-fourth mile below the bridge.

Channel.—Gravel and small bowlders.

Discharge measurements.—Made from highway bridge or by wading. As the channel is very rough at the bridge, a car and cable were installed on November 7, 1911, 200 feet above the gage.

Winter flow.—Some ice in the stream during the last week in December. This occurrence is unusual.

Accuracy.—As measurements made from the bridge are not considered reliable, estimates are withheld until measurements at the cable section are available.

Cooperation.—Previous to August 21, 1911, gage-height record was furnished by United States Forest Service. Discharge measurements also furnished by the Forest Service.

Discharge measurements of Middle Fork of Yuba River near North San Juan, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 25[a]	G. T. Peekema	7.15	2,800
June 14[a]	do	7.05	2,710
Nov. 9[b]	do	4.32	78

[a] Measurement made from bridge. [b] By wading 150 feet above gage.

[1] Known locally as Middle Yuba River.

Daily gage height, in feet, of Middle Fork of Yuba River near North San Juan, Ca., for 1911.

[C. E. Whittum and H. Zurhorst, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.		7.5								4.3	4.3	4.4
2.		7.15	5.3					4.6	4.3	4.4	4.3	4.4
3.		6.8		7.0					4.3	4.3	4.3	4.4
4.		6.7	6.3						4.2	4.3	4.3	4.4
5.		6.7	6.6						4.2	4.4	4.3	4.3
6.			7.0		6.85				4.3	4.5	4.3	4.3
7.			7.9			7.3	5.7		4.3	4.4	4.3	4.4
8.			7.3						4.3	4.4	4.3	4.4
9.		6.0	6.95						4.3	4.4	4.3	4.4
10.		5.8	6.6						4.3	4.5	5.2	4.3
11.		6.0	6.5						4.3	4.5	4.6	4.3
12.		5.8			6.8				4.3	4.4	4.4	4.3
13.		5.9							4.3	4.3	4.4	4.3
14.						7.05	5.2		4.3	4.4	4.4	4.3
15.		5.5	6.3						4.2	4.5	4.4	4.3
16.			6.3						4.2	4.4	4.8	4.3
17.			6.2	7.05		6.9			4.2	4.4	4.5	4.4
18.		5.5	5.8						4.2	4.4	4.5	4.3
19.	5.3	5.4			6.75				4.2	4.4	4.5	4.3
20.	8.0								4.2	4.4	4.5	4.3
21.	6.5	5.3						4.4	4.2	4.3	4.4	4.3
22.	5.8	5.3						4.4	4.2	4.3	4.4	4.3
23.	5.4							4.4	4.2	4.3	4.4	4.3
24.	7.7				6.9		4.9	4.3	4.2	4.3	4.4	4.3
25.	7.6			7.15	6.9			4.3	4.2	4.4	4.4	4.4
26.	6.5					6.1		4.3	4.3	4.4	4.4	4.6
27.	6.0	5.4						4.3	4.3	4.4	4.3	4.3
28.	6.2							4.3	4.4	4.4	4.3	4.4
29.	7.8					6.1		4.3	4.4	4.4	4.4	4.4
30.	9.25								4.4	4.4	4.4	4.3
31.	9.5		7.2					4.3		4.4		4.3

YUBA RIVER NEAR SMARTSVILLE, CAL.

Location.—At The Narrows, in sec. 22, T. 16 N., R. 6 E., 1 mile north of Smartsville and 18 miles above the junction with Feather River.

Records available.—June 2, 1903, to December 31, 1911.

Drainage area.—1,220 square miles.

Gage.—Vertical staff in four sections. Three sections are on left bank and one on right bank. On account of the gradual erosion of the channel the gage datum was lowered 10 feet on August 1, 1906.

Channel.—Gravel and small bowlders, and is shifting. As the result of extensive placer mining in the early days the channel has been filled with an enormous quantity of tailings. At the station the depth of mining débris is more than 80 feet.

Discharge measurements.—Made from car and cable at gage.

Diversions and storage.—Water is diverted for power and irrigation above the station. Several small glacial lakes near the headwaters of the South Fork of Yuba are utilized as storage reservoirs.

Accuracy.—Conditions for obtaining accurate discharge data at high stages are poor, owing to the shifting of the channel and the torrential nature of the stream. Results at low and medium stages are good—at high water they should be considered approximate.

Discharge measurements of Yuba River near Smartsville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 17	J. R. McKeel	6.60	1,810
Feb. 19	do	8.00	3,180
Apr. 30	do	9.50	8,360
May 29	do	9.90	10,600
July 9	do	7.20	3,460
23	do	5.30	1,280
Aug. 20	do	4.40	544
Sept. 3	do	4.30	462
Oct. 5	J. E. Stewart	4.43	547
Dec. 19	J. R. McKeel	4.45	538

Daily gage height, in feet, of Yuba River near Smartsville, Cal., for 1911.

[J. R. McKeel, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	14.2	7.5	11.9	9.7	10.0	7.9	4.8	4.3	4.3	4.3	4.4
2	4.9	13.7	7.5	12.5	9.5	10.3	8.0	4.8	.....	4.3	.....	4.35
3	4.9	13.1	8.6	12.4	9.7	10.6	7.8	4.8	4.3	.....	4.25	4.35
4	4.8	13.1	11.2	12.1	10.8	11.7	.....	4.8	.....	4.3	4.2	.....
5	.....	12.5	10.9	13.6	11.8	11.9	7.5	4.7	.....	4.43	.....	4.35
6	4.8	11.9	12.1	15.0	10.7	11.2	7.6	4.7	4.3	4.4	4.2	.....
7	4.8	11.4	15.1	13.4	10.5	10.9	7.5	.....	.....	4.35	.....	4.35
8	4.8	10.5	13.6	12.5	9.7	10.5	7.3	4.7	4.3	.....	4.2	.....
9	5.0	9.9	11.7	12.4	9.6	10.4	7.2	4.6	.....	4.4	4.2	4.35
10	6.0	9.4	11.2	11.6	9.4	10.6	7.1	4.6	4.3	4.45	6.4	.....
11	5.6	9.9	10.6	10.8	9.7	11.6	6.9	4.6	.....	4.4	4.95	4.3
12	9.8	.....	10.1	10.0	10.0	10.9	6.8	4.6	.....	4.35	4.6	4.25
13	8.8	9.9	9.6	9.6	10.2	10.7	6.8	4.6	4.3	4.3	4.5	.....
14	12.5	9.2	9.4	9.2	9.7	10.5	6.6	4.5	.....	4.3	4.5	4.25
15	8.8	8.8	9.2	8.9	9.4	10.4	6.6	4.5	.....	.....	4.5	.....
16	6.9	8.3	9.2	.....	9.4	10.3	6.7	4.5	4.3	4.3	5.2	4.2
17	6.6	8.2	9.3	9.1	8.9	10.5	6.6	4.5	4.3	.....	4.7	4.45
18	6.5	8.2	9.2	9.2	9.6	10.9	6.5	4.5	.....	4.3	4.6	4.35
19	6.5	8.0	9.3	9.5	9.0	10.1	6.2	4.5	4.2	4.3	4.5	4.45
20	14.0	7.9	9.5	9.4	9.1	10.0	5.9	4.4	.....	.....	.....	4.4
21	11.5	7.8	9.7	9.4	9.7	9.8	5.7	.....	4.2	4.25	4.5	4.35
22	8.3	7.7	9.9	9.7	10.2	9.3	5.5	4.4	.....	.....	.....	.....
23	7.7	7.6	9.9	10.3	10.6	8.8	5.3	4.4	4.2	4.2	4.4	4.3
24	15.0	7.5	10.0	10.6	10.1	8.4	5.3	4.4	.....	.....	.....	.....
25	13.8	7.4	10.1	11.5	9.8	8.2	5.2	.....	4.2	4.2	4.4	4.3
26	12.0	7.2	9.9	11.9	9.5	8.1	5.1	4.4	4.3	4.25	.....	.....
27	10.3	7.3	9.6	11.0	9.6	8.6	5.0	.....	4.4	4.5	4.4	4.4
28	10.5	7.1	9.8	10.0	.....	8.5	5.0	4.3	4.3	4.35	4.4	4.6
29	13.0	.....	10.3	9.4	10.0	8.2	4.9	.....	4.3	.....	.....	4.5
30	18.0	.....	11.0	9.5	10.0	8.0	.....	4.3	4.3	4.3	4.4	4.5
31	19.0	.....	11.6	.....	10.1	.....	4.9	.....	.....	4.3	.....	4.5

Daily discharge, in second-feet, of Yuba River near Smartsville, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	541	19,700	2,460	13,400	7,900	9,140	4,800	795	465	465	465	525
2	507	17,900	2,460	15,200	7,400	10,000	5,000	795	465	465	452	495
3	507	15,800	4,180	14,900	7,900	10,800	4,610	795	465	465	438	495
4	466	15,800	9,970	14,000	10,800	14,000	4,340	795	465	465	410	495
5	466	13,700	9,190	18,600	13,700	14,600	4,060	720	465	543	410	495
6	466	11,900	12,500	23,400	10,500	12,600	4,240	720	465	525	410	495
7	466	10,500	23,000	18,000	10,000	11,700	4,060	720	465	495	410	495
8	466	8,190	18,400	15,200	7,900	10,500	3,720	720	465	510	410	495
9	550	6,800	12,600	15,200	7,660	10,200	3,560	650	465	525	410	495
10	1,220	5,730	11,200	12,800	7,150	10,800	3,400	650	465	555	2,410	480
11	895	6,800	9,480	10,500	8,140	13,700	3,100	650	465	525	910	465
12	7,160	6,000	8,190	8,400	8,900	11,700	2,960	650	465	495	650	438
13	5,110	6,800	7,000	7,400	9,460	11,100	2,960	650	465	465	585	438
14	14,100	5,320	6,500	6,500	8,140	10,800	2,680	585	465	465	585	438
15	5,110	4,540	6,070	5,800	7,400	10,500	2,680	585	465	465	585	424
16	2,160	3,660	6,070	6,020	7,400	10,200	2,820	585	465	465	1,120	410
17	1,810	3,490	6,280	6,250	6,200	10,800	2,680	585	465	465	720	555
18	1,700	3,490	6,070	6,500	7,900	12,000	2,540	585	438	465	650	495
19	1,700	3,170	6,280	7,150	6,500	9,700	2,160	585	410	465	585	555
20	19,000	3,020	6,750	6,900	6,700	9,400	1,810	525	410	452	585	525
21	11,200	2,870	7,200	6,900	8,140	8,880	1,600	525	410	438	585	495
22	4,200	2,730	7,770	7,650	9,460	7,660	1,400	525	410	424	555	480
23	3,240	2,590	7,770	9,150	10,600	6,460	1,210	525	410	410	525	465
24	22,600	2,460	8,130	10,000	9,200	5,600	1,210	525	410	410	525	465
25	18,300	2,340	8,450	12,800	8,400	5,200	1,120	525	410	410	525	465
26	12,600	2,110	7,900	14,000	7,640	5,000	1,040	525	465	438	525	495
27	8,270	2,220	7,160	11,400	7,900	6,000	950	495	525	585	525	525
28	8,730	2,000	7,640	8,640	8,520	5,800	950	465	465	495	525	650
29	15,600	.....	9,000	7,150	9,140	5,200	870	465	465	480	525	585
30	34,800	.....	10,800	7,400	9,140	4,800	870	465	465	465	525	585
31	39,000	.....	12,600	.....	9,420	.....	870	465	.....	465	.....	585

NOTE.—Daily discharge determined from rating curves fairly well defined at medium and low stages applicable Jan. 1 to 31, Feb. 1 to Mar. 7, and July 1 to Dec. 31. Discharge Feb. 12 estimated by means of record of discharge from the adjacent drainage areas. Daily discharge Mar. 8 to June 30 determined by indirect method for shifting channels. Discharge interpolated for days in July and December on which gage was not read.

Monthly discharge of Yuba River near Smartsville, Cal., for 1911.

[Drainage area, 1,220 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	39,000	466	7,840	6.43	7.41	482,000	B.
February	19,700	2,000	6,840	5.61	5.84	380,000	B.
March	23,000	2,460	8,680	7.11	8.20	534,000	C.
April	23,400	5,800	10,900	8.93	9.96	649,000	C.
May	13,700	6,200	8,560	7.02	8.09	526,000	B.
June	14,600	4,800	9,490	7.78	8.68	565,000	B.
July	5,000	870	2,590	2.12	2.44	159,000	B.
August	795	465	608	.498	.57	37,400	A.
September	525	410	453	.371	.41	27,000	A.
October	585	410	476	.390	.45	29,300	A.
November	2,410	410	618	.507	.57	36,800	A.
December	650	410	500	.410	.47	30,700	A.
The year	39,000	410	4,770	3.91	53.09	3,460,000	

OREGON CREEK NEAR NORTH SAN JUAN, CAL.

Location.—Below highway bridge in the N. ½ SE. ¼ sec. 28, T. 18 N., R. 8 E., in the Tahoe National Forest, 500 feet above the mouth, half a mile above Freemans Bridge, and 2 miles northeast of North San Juan.

Records available.—October 28, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to an alder tree on right bank 150 feet below bridge.

Channel.—Small bowlders and gravel and shifts at high stages.

Discharge measurements.—Made from bridge or by wading near gage. As the bridge section is rough, a car and cable were installed on November 8, 1911, 30 feet below gage.

Cooperation.—Gage height record furnished by United States Forest Service until August 21, 1911.

Estimates are withheld until high-water measurements are made at the cable section.

Discharge measurements of Oregon Creek near North San Juan, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 25[a]	G. T. Peekema	5.25	291
June 13[b]	do	4.40	51
Nov. 8[c]	do	4.01	8.9

[a] Measurement from highway bridge, 600 feet above mouth of creek.
[b] Measurement by wading 200 feet below gage.
[c] Measurement by wading 150 feet above mouth.

Daily gage height, in feet, of Oregon Creek near North San Juan, Cal., for 1911.

[C. E. Whittum and H. Zurhorst, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		6.0								3.9	3.9	4.0
2		5.7	4.5					3.9	3.8	3.9	3.9	4.0
3		5.5		7.5					3.8	3.9	3.9	4.0
4		5.5	5.0						3.8	3.9	3.9	4.0
5		5.4	5.4						3.8	4.0	3.9	3.9
6			5.8		5.15				3.8	4.0	3.9	3.9
7		5.3	6.1			4.7	4.1		3.8	3.9	3.9	4.0
8			5.8						3.8	3.9	3.9	3.9
9		4.9	5.6						3.8	3.9	4.1	3.9
10			5.5						3.8	4.0	4.7	3.9
11		4.9	5.5						3.8	3.9	4.2	3.9
12		4.8							3.8	3.9	4.1	3.9
13		4.9			5.1	4.4			3.8	3.9	4.0	3.9
14							4.0		3.8	3.9	4.1	3.9
15		4.7	5.3						3.8	3.9	4.1	3.9
16			5.2						3.8	3.9	4.3	3.9
17			5.2	5.4		4.3			3.8	3.9	4.0	4.0
18		4.6	5.0						3.8	3.9	4.1	4.0
19	4.3	4.6			6.05				3.8	3.9	4.1	4.0
20	6.6								3.8	3.9	4.0	4.0
21	5.5	4.5						3.9	3.8	3.9	4.0	4.0
22	5.0	4.5						3.9	3.8	3.9	4.0	4.0
23	4.7							3.9	3.8	3.9	4.0	4.0
24	6.4				5.8		3.9	3.9	3.8	3.9	4.0	4.0
25	6.2			5.25	5.8			3.9	3.8	3.9	4.0	3.9
26	5.5					4.2		3.9	3.9	3.9	4.0	3.9
27	5.2	4.4						3.9	3.9	4.0	3.9	3.9
28	5.3							3.9	3.9	3.9	3.9	4.0
29	6.1					4.2		3.9	3.9	3.9	3.9	4.0
30	6.85								3.9	3.9	4.0	4.0
31	6.75		5.5					3.8		3.9		4.0

NORTH FORK OF YUBA RIVER[1] NEAR SIERRA CITY, CAL.

Location.—At footbridge 1½ miles west of Sierra City, in the Tahoe National Forest, 2½ miles below junction of North and South forks of North Fork of Yuba River.
Records available.—November 1 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff fastened to upstream end of left abutment of footbridge.
Channel.—Bowlders and gravel.
Discharge measurements.—Made from footbridge or by wading.
Cooperation.—Gage-height record and discharge measurement furnished by United States Forest Service.

The following discharge measurement was made by G. T. Peekema:
November 1, 1911: Gage height, 1.95 feet; discharge, 89 second-feet.

Daily gage height, in feet, of North Fork of Yuba River near Sierra City, Cal., for 1911.

[A. H. Walton, observer.]

Date.	Nov.	Dec.	Date.	Nov.	Dec.	Date.	Nov.	Dec.
1	1.95		11			21		
2		2.0	12			22		
3			13	2.75		23		
4		2.1	14			24		
5	2.3		15			25	2.3	
6			16			26		
7			17			27		
8			18			28		
9			19			29		
10	2.0		20			30	2.35	
						31		

NORTH FORK OF YUBA RIVER[1] AT GOODYEAR BAR, CAL.

Location.—At highway bridge at Goodyear Bar, in the E. ½ SW. ¼ sec. 5, T. 19 N., R. 10 E., in the Tahoe National Forest. North Fork of North Fork of Yuba River enters at Downieville, 4 miles above, and Rock Creek and Goodyear Creek one-eighth and one-fourth mile, respectively, below the station.
Records available.—October 31, 1910, to December 31, 1911.
Drainage area.—214 square miles.
Gage.—Vertical staff in two sections on left bank. Low-water section is fastened to old piling under bridge, while remainder of gage is bolted to downstream end of bridge pier.
Channel.—Solid rock, small bowlders, and gravel; appears permanent.
Discharge measurements.—Made from downstream side of bridge.
Accuracy.—Results are good.
Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

[1] Known locally as North Yuba River.

Discharge measurements of North Fork of Yuba River at Goodyear Bar, Cal., 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 13	Fred G. Wood	3.98	390
23	.....do	3.97	395
25	.....do	5.12	1,200
26	.....do	4.45	697
27	.....do	4.25	507
Apr. 23	G. T. Peekema	5.78	1,940
June 15	.....do	6.80	3,170
Nov. 3	.....do	3.46	173

Daily gage height, in feet, of North Fork of Yuba River at Goodyear Bar, Cal., for 1911.

[W. S. Barton and G. E. King, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.5	7.1	3.7	6.0	5.8	6.6	5.7	4.0	3.6	3.5	3.45	.....
2	3.5	6.8	3.6	6.5	5.8	6.8	5.5	4.0	3.6	3.5	3.45	3.45
3	3.5	6.2	3.8	6.7	6.1	7.0	5.6	3.95	3.6	3.5	3.45	3.45
4	3.5	5.8	4.0	6.5	6.2	6.9	5.45	3.9	3.6	3.6	3.45	3.45
5	3.5	4.6	4.0	6.6	6.4	.....	5.55	3.9	3.6	.....	3.45	.....
6	3.5	4.0	4.0	6.7	6.0	.....	5.4	3.9	.....	3.55	3.45	3.4
7	3.65	3.8	4.3	6.5	5.9	7.1	5.3	3.9	3.6	3.55	3.45	3.4
8	3.7	3.5	4.3	6.5	5.85	7.2	5.25	3.85	.....	3.55	3.45	3.4
9	3.8	3.5	4.3	6.0	5.8	7.3	5.15	.....	3.6	3.55	3.55	3.4
10	3.7	3.6	4.9	6.0	5.75	7.8	5.0	3.8	3.6	3.55	4.0	3.4
11	3.65	3.5	5.0	5.9	6.0	7.2	5.0	3.8	3.6	.....	3.55	3.4
12	3.7	3.5	5.2	5.7	6.1	7.5	4.9	3.8	3.6	3.5	.....	3.4
13	4.0	3.5	5.0	6.1	6.0	7.7	4.85	3.8	3.6	3.5	3.5	3.4
14	3.8	3.6	4.6	5.8	5.9	7.6	4.8	3.8	3.55	3.5	3.5	3.4
15	3.6	3.5	4.6	5.5	5.85	7.4	.....	3.8	3.55	3.5	3.7	3.4
16	3.5	3.5	4.3	5.5	5.8	7.6	4.8	3.8	3.5	3.5	3.65	3.4
17	3.6	3.7	4.3	5.4	.....	.....	4.7	3.75	3.5	.....	3.55	3.4
18	3.8	3.6	4.6	5.4	5.75	.....	4.6	3.75	.....	3.5	3.5	3.4
19	3.7	3.5	4.6	5.5	5.6	7.5	4.6	3.75	3.5	3.5	3.5	3.4
20	4.8	3.5	4.6	5.5	5.9	7.1	4.5	.....	3.5	3.5	3.55	3.35
21	4.5	3.5	4.9	5.5	6.2	6.8	4.8	.....	3.5	3.5	3.5	3.35
22	3.8	3.5	5.0	5.5	6.3	6.5	.....	.....	3.5	3.5	3.5	3.35
23	4.0	3.5	5.0	5.8	6.9	6.2	4.4	3.7	3.5	3.5	3.45	3.35
24	4.6	3.5	5.1	5.9	6.4	6.0	4.3	.....	3.5	3.5	3.45	.....
25	4.3	3.5	5.1	6.0	6.2	5.85	4.25	3.7	3.5	3.5	3.45	3.3
26	3.8	3.5	5.2	6.1	6.1	6.3	4.2	3.7	3.55	3.45	3.45	3.3
27	4.15	3.6	5.5	6.0	6.2	6.1	4.2	.....	3.6	.....	3.45	3.45
28	4.5	3.5	5.8	6.0	6.3	6.0	4.1	.....	3.55	.....	3.5	3.5
29	7.5	.....	5.8	6.2	6.6	5.9	4.1	3.7	3.5	.....	3.5	3.45
30	7.5	.....	6.0	6.0	6.4	5,8	4.1	3.65	3.5	3.45	3.45	3.45
31	7.6	.....	6.0	.....	6.3	.....	4.0	.....	.....	3.45	.....	3.45

Daily discharge, in second-feet, of North Fork of Yuba River at Goodyear Bar, Cal., for 1910–11.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1	150	567	11	184	1,400	21	220	330
2	150	983	12	184	715	22	220	305
3	150	1,300	13	184	405	23	520	305
4	150	969	14	184	405	24	445	305
5	150	637	15	184	355	25	370	282
6	167	305	16	184	355	26	295	260
7	172	305	17	202	355	27	220	260
8	177	405	18	202	355	28	197	282
9	202	790	19	220	330	29	173	260
10	184	865	20	220	330	30	150	260
						31	.....	260

Daily discharge, in second-feet, of North Fork of Yuba River at Goodyear Bar, Cal., for 1910–11—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	184	3 580	260	2,170	1,930	2,920	1,820	405	220	184	167	167
2	184	3,180	220	2,790	1,930	3,180	1,600	405	220	184	167	167
3	184	2,410	305	3,050	2 290	3,440	1,710	380	220	184	167	167
4	184	1,930	405	2,790	2,410	3,310	1 550,	355	220	220	167	167
5	184	790	405	2,920	2,660	3,400	1,660	355	220	211	167	158
6	184	405	405	3,050	2,170	3,490	1,500	355	220	202	167	150
7	240	305	580	2,790	2,050	3,580	1,400	355	220	202	167	150
8	260	184	580	2,790	1,990	3,720	1,350	330	220	202	167	150
9	305	184	580	2,170	1,930	3,860	1,260	318	220	202	202	150
10	260	220	1,030	2,170	1,880	4,570	1,120	305	220	202	405	150
11	240	184	1,120	2,050	2,170	3,720	1,120	305	220	193	202	150
12	260	184	1,300	1,820	2,290	4,140	1,030	305	220	184	193	150
13	405	184	1,120	2,290	2,170	4,420	988	305	220	184	184	150
14	305	220	790	1,930	2,050	4,280	945	305	202	184	184	150
15	220	184	790	1,600	1,990	4,000	945	305	202	184	260	150
16	184	184	580	1,600	1,930	4,280	945	305	184	184	240	150
17	220	260	580	1,500	1,900	4,230	865	282	184	184	202	150
18	305	220	790	1,500	1,880	4,190	790	282	184	184	184	150
19	260	184	790	1,600	1,710	4,140	790	282	184	184	184	150
20	945	184	790	1,600	2,050	3,580	715	276	184	184	202	135
21	715	184	1,030	1,600	2,410	3,180	945	270	184	184	184	135
22	305	184	1,120	1,600	2,530	2,790	790	265	184	184	184	135
23	405	184	1,120	1,930	3,310	2,410	645	260	184	184	167	135
24	790	184	1,210	2,050	2,660	2,170	580	260	184	184	167	128
25	580	184	1,210	2,170	2,410	1,990	550	260	184	184	167	120
26	305	184	1,300	2,290	2,290	2,530	520	260	202	167	167	120
27	490	220	1,600	2,170	2,410	2,290	520	260	220	167	167	167
28	715	184	1,930	2,170	2,530	2,170	460	260	202	167	184	184
29	4,140	.....	1,930	2,410	2,920	2,050	460	260	184	167	184	167
30	4,140	.....	2,170	2,170	2,660	1,930	460	240	184	167	167	167
31	4,280	.....	2,170	.....	2,530	.....	405	230	.....	167	.....	167

NOTE.—Daily discharge 1910–11 determined from a well-defined rating curve. Discharge interpolated for days on which gage was not read.

Monthly discharge of North Fork of Yuba River at Goodyear Bar, Cal., for 1910–11.

[Drainage area, 214 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
November	520	150	214	1.00	1.12	12,700	A.
December	1,400	260	482	2.25	2.59	29,600	A.
1911.							
January	4,280	184	723	3.38	3.90	44,500	A.
February	3,580	184	596	2.79	2.90	33,100	A.
March	2,170	220	975	4.56	5.26	60,000	A.
April	3,050	1,500	2,160	10.1	11.27	129,000	A.
May	3,310	1,710	2,260	10.6	12.22	139,000	A.
June	4,570	1,930	3,330	15.6	17.40	198,000	A.
July	1,820	405	982	4.59	5.29	60,400	A.
August	405	230	301	1.41	1.63	18,500	A.
September	220	184	203	.949	1.06	12,100	A.
October	220	167	186	.869	1.00	11,400	A.
November	405	167	191	.893	1.00	11,400	A.
December	184	120	151	.706	.81	9,280	A.
The year	4,570	120	1,000	4.67	63.74	727,000	

NORTH FORK OF NORTH FORK OF YUBA RIVER[1] AT DOWNIEVILLE, CAL.

Location.—At upper highway bridge in Downieville, in the NE. ¼ NW. ¼ sec. 35, T. 20 N., R. 10 E., 500 feet above dam and one-fourth mile above junction with North Fork of Yuba River. Middle Fork of North Fork enters 1¼ miles above and East Fork of North Fork one-eighth mile above the station.

Records available.—November 1, 1910, to December 31, 1911.

Drainage area.—71.2 square miles.

Gage.—Vertical staff fastened to stream face of right abutment of bridge.

Channel.—Gravel and small bowlders and appears permanent.

Discharge measurements.—Usually made from bridge just above mouth.

Winter flow.—Some ice in stream during November and December, 1911. It is believed that the ice affected the discharge but little and no correction has been applied.

Diversions.—The intake of the municipal water system of Downieville is above the station.

Accuracy.—Gage-height record is considered very reliable and rating curve is well defined. Results are excellent.

Cooperation.—Gage-height record furnished by John T. Mason.

Discharge measurements of North Fork of North Fork of Yuba River at Downieville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 16	Fred G. Wood	2.91	107
20	do	3.74	541
21	do	3.3	241
22	do	3.11	172
Apr. 2	G. T. Peekema	4.28	930
June 15	do	4.60	1,260
Nov. 2	do	2.73	69

Daily gage height, in feet, of North Fork of North Fork of Yuba River at Downieville, Cal., for 1911.

[J. T. Mason, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.75	3.85	3.0	4.55	4.0	4.4	3.8	3.2	2.8	2.8	2.75	2.65
2	2.75	3.8	3.0	4.7	4.0	4.55	3.7	3.1	2.8	2.75	2.74	2.67
3	2.7	3.6	3.1	4.65	4.05	4.75	3.7	3.1	2.8	2.75	2.75	2.6
4	2.7	3.6	3.05	4.45	4.45	4.65	3.7	3.1	2.8	2.85	2.75	2.65
5	2.7	3.6	3.45	4.6	4.45	4.8	3.7	3.1	2.8	2.8	2.75	2.67
6	2.7	3.6	3.55	4.85	4.35	4.55	3.7	3.0	2.8	2.8	2.75	2.67
7	2.7	3.6	3.7	4.45	4.25	4.6	3.6	3.0	2.8	2.8	2.75	2.7
8	2.7	3.5	3.65	4.4	4.1	4.6	3.6	3.0	2.8	2.8	2.75	2.7
9	2.9	3.4	3.6	4.4	4.1	4.6	3.6	3.0	2.8	2.8	2.8	2.7
10	2.85	3.3	3.4	4.2	4.05	4.75	3.5	3.0	2.8	2.8	2.8	2.7
11	2.75	3.3	3.5	4.0	4.2	4.95	3.5	3.0	2.8	2.8	2.8	2.6
12	2.7	3.2	3.4	3.9	4.25	4.75	3.5	3.0	2.8	2.8	2.8	2.65
13	3.1	3.15	3.4	3.8	4.3	4.7	3.4	3.0	2.8	2.8	2.7	2.65
14	3.0	3.0	3.4	3.75	4.05	4.55	3.4	3.0	3.8	2.8	2.7	2.65
15	3.0	2.9	3.4	3.7	4.05	4.5	3.5	3.0	2.8	2.8	2.8	2.65
16	2.9	3.0	3.4	3.7	4.0	4.6	3.3	2.9	2.8	2.75	2.7	2.65
17	2.9	3.1	3.4	3.7	4.05	4.5	3.4	2.9	2.8	2.75	2.75	2.65
18	2.85	3.1	3.4	3.75	4.0	4.8	3.4	2.9	2.8	2.75	2.75	2.65
19	2.9	3.1	3.55	3.9	4.0	4.8	3.4	2.9	2.8	2.75	2.75	2.65
20	3.7	3.1	3.6	3.8	4.0	4.5	3.4	2.9	2.8	2.75	2.8	2.65

[1] Known locally as North Fork of North Yuba River.

Daily gage height, in feet, of North Fork of North Fork of Yuba River at Downieville, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
21	3.2	3.1	3.6	3.85	4.15	4.4	3.4	2.9	2.8	2.75	2.8	2.65
22	3.1	3.05	3.65	3.95	4.35	4.2	3.2	2.9	2.8	2.75	2.8	2.65
23	3.05	3.05	3.7	4.1	4.55	4.1	3.2	2.9	2.8	2.75	2.8	2.65
24	3.4	3.05	3.75	4.35	4.3	4.1	3.2	2.9	2.8	2.75	2.75	2.63
25	3.5	3.0	3.8	4.45	4.25	4.0	3.2	2.9	2.8	2.75	2.7	2.6
26	3.4	3.0	3.8	4.5	4.1	4.2	3.2	2.9	2.8	2.75	2.7	2.6
27	3.2	3.0	3.8	4.35	4.3	4.2	3.2	2.9	2.8	2.75	2.7	.....
28	3.1	3.0	3.8	4.15	4.3	4.0	3.2	2.9	2.8	2.75	2.67	2.6
29	3.9	.....	3.9	4.05	4.4	4.0	3.2	2.9	2.8	2.75	2.65	2.65
30	5.4	.....	4.05	4.1	4.4	4.0	3.2	2.9	2.8	2.75	2.65	2.65
31	4.55	.....	4.25	.....	4.35	.....	3.2	2.8	.....	2.75	.....	2.65

Daily discharge, in second-feet, of North Fork of North Fork of Yuba River at Downieville, Cal., for 1910–11.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1	52	57	11	78	550	21	42	103
2	52	57	12	125	300	22	42	103
3	57	515	13	68	205	23	355	90
4	57	228	14	50	185	24	130	90
5	50	148	15	50	148	25	165	90
6	52	130	16	54	148	26	130	86
7	52	130	17	42	148	27	78	78
8	78	275	18	96	140	28	57	78
9	65	428	19	63	130	29	57	78
10	57	385	20	42	103	30	57	78
						31	.....	72

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	68	585	130	1,200	690	1,050	550	205	78	78	68	50
2	68	550	130	1,380	690	1,200	480	165	78	68	65	52
3	57	415	165	1,320	730	1,440	480	165	78	68	68	42
4	57	415	148	1,100	1,100	1,320	480	165	78	90	68	50
5	57	415	328	1,260	1,100	1,500	480	165	78	78	68	52
6	57	415	385	1,560	1,000	1,200	480	130	78	78	68	52
7	57	415	480	1,100	905	1,260	415	130	78	78	68	57
8	57	355	448	1,050	770	1,260	415	130	78	78	68	57
9	103	300	415	1,050	770	1,260	415	130	78	78	78	57
10	90	250	300	860	730	1,440	355	130	78	78	78	57
11	68	250	355	690	860	1,680	355	130	78	78	78	42
12	57	205	300	620	905	1,440	355	130	78	78	78	50
13	165	185	300	550	950	1,380	300	130	78	78	57	50
14	130	130	300	415	730	1,200	300	130	78	78	57	50
15	130	103	300	480	730	1,150	355	130	78	78	78	50
16	103	130	300	480	690	1,260	250	103	78	68	57	50
17	103	165	300	480	730	1,150	300	103	78	68	68	50
18	90	165	300	415	690	1,500	300	103	78	68	68	50
19	103	165	385	620	690	1,500	300	103	78	68	68	50
20	480	165	415	550	690	1,150	300	103	78	68	78	50
21	205	165	415	585	815	1,050	300	103	78	68	78	50
22	165	148	448	655	1,000	860	205	103	78	68	78	50
23	148	148	480	770	1,200	770	205	103	78	68	78	50
24	300	148	515	1,000	950	770	205	103	78	68	68	46
25	355	130	550	1,100	905	690	205	103	78	68	57	42
26	300	130	550	1,150	770	860	205	103	78	68	57	42
27	205	130	550	1,000	950	860	205	103	78	68	57	42
28	165	130	550	815	950	690	205	103	78	68	52	42
29	620	.....	620	730	1,050	690	205	103	78	68	50	50
30	2,290	.....	730	770	1,050	690	205	103	78	68	50	50
31	1,200	.....	905	.....	1,000	.....	205	78	.....	68	.....	50

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of North Fork of North Fork of Yuba River at Downieville, Cal., for 1910–11.

[Drainage area, 71.2 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
November	355	42	78.4	1.10	1.23	4,670	A.
December	515	57	173	2.43	2.80	10,600	A.
1911.							
January	2,290	57	260	3.65	4.21	16,000	A.
February	585	103	247	3.47	3.61	13,700	A.
March	905	130	403	5.66	6.52	24,800	A.
April	1,560	415	858	12.1	13.50	51,100	A.
May	1,200	690	864	12.1	13.95	53,100	A.
June	1,680	690	1,140	16.0	17.85	67,800	A.
July	550	205	323	4.54	5.23	19,900	A.
August	205	78	122	1.71	1.97	7,500	A.
September	78	78	78.0	1.10	1.23	4,640	A.
October	90	68	72.6	1.02	1.18	4,460	A.
November	78	50	67.0	.941	1.05	3,990	A.
December	57	42	49.4	.694	.80	3,040	A.
The year	2,290	42	373	5.24	71.10	270,000	

ROCK CREEK AT GOODYEAR BAR, CAL.

Location.—At the footbridge at Goodyear Bar, in the W. ½ SW. ¼ sec. 5, T. 19 N., R. 10 E., in the Tahoe National Forest. Woodruff Creek enters 350 feet above and Rock Creek joins the North Fork of Yuba River 600 feet below the station.

Records available.—October 30, 1910, to December 31, 1911.

Drainage area.—10.8 square miles.

Gage.—Vertical staff fastened to an alder tree on right bank 40 feet below bridge.

Channel.—Bowlders and gravel, and is rough. Section appears permanent.

Discharge measurements.—Made from bridge at high stages and by wading at low stages.

Diversions.—Three small ditches, having a total capacity of about 10 second-feet, head above the station.

Accuracy.—Results are fairly good.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Rock Creek at Goodyear Bar, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 13	Fred G. Wood	3.06	29
25	do	4.32	182
26	do	3.7	106
27	do	3.39	52
Apr. 23	G. T Peekema	3.79	112
June 14[a]	do	3.15	43
Nov. 3[b]	do	2.20	1.7

[a] Measurement made by wading. [b] Measurement made by wading 50 feet above bridge.

Daily gage height, in feet, of Rock Creek at Goodyear Bar, Cal., for 1911.

[W. S. Barton, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	5.4	2.6	4.2	4.2	3.5	2.55	2.2	2.0	2.2	2.2	.....
2	2.5	5.2	2.7	4.6	3.9	3.55	2.6	2.05	2.0	2.2	2.2	2.3
3	2.45	5.0	2.9	4.9	3.8	3.6	2.5	2.05	2.05	2.2	2.2	2.25
4	2.45	4.5	3.0	4.6	3.7	3.5	2.45	2.1	2.05	2.3	2.2	2.25
5	2.4	3.6	3.0	4.6	4.0	.....	2.5	2.1	2.1	.....	2.2	.....
6	2.4	2.8	3.0	4.7	3.8	.....	2.45	2.1	.....	2.3	2.2	2.25
7	2.4	2.5	3.2	4.5	3.7	3.5	2.45	2.15	2.1	2.3	2.2	2.25
8	2.7	2.5	3.4	4.2	3.7	3.45	2.4	2.1	.....	2.25	2.2	2.25
9	2.6	2.5	3.4	4.0	3.7	3.4	2.45	.....	2.05	2.25	2.3	2.2
10	2.7	2.6	3.8	4.1	3.6	3.4	2.45	2.05	2.05	2.25	2.8	2.2
11	2.55	2.5	3.8	4.0	3.7	3.3	2.4	2.05	.....	.....	2.35	2.2
12	2.75	2.5	4.0	4.0	3.8	3.3	2.4	2.05	2.05	2.2	.....	2.2
13	3.2	2.6	3.6	4.3	3.7	3.3	2.4	2.05	2.05	2.2	2.3	2.2
14	2.9	2.6	3.5	4.0	3.65	3.2	2.3	2.0	2.05	2.2	2.3	2.25
15	2.8	2.5	3.2	3.9	3.6	3.1	.....	2.0	2.1	2.2	2.65	2.25
16	2.7	2.6	3.0	3.8	3.55	3.05	2.25	2.0	2.1	2.2	2.45	2.25
17	2.8	2.6	3.0	3.7	.....	.....	2.3	2.0	2.1	.....	2.85	2.25
18	2.8	2.6	3.1	3.7	3.7	.....	2.25	2.0	.....	2.2	2.3	2.25
19	2.9	2.5	2.9	3.8	3.6	2.9	2.25	2.0	2.1	2.2	2.3	2.25
20	4.2	2.5	2.9	4.0	3.7	2.8	.....	.....	2.05	2.2	2.35	2.25
21	3.8	2.5	2.9	4.4	3.8	2.8	2.25	.....	2.05	2.2	2.3	2.25
22	3.4	2.5	3.0	4.7	3.7	2.75	.....	.....	2.1	2.2	2.3	2.25
23	2.8	2.6	3.0	4.9	3.8	2.75	2.25	2.0	2.1	2.2	2.25	2.25
24	5.0	2.5	2.8	5.0	3.7	2.75	2.3	.....	2.1	2.2	2.3	.....
25	4.8	2.5	2.8	5.4	3.6	2.7	2.3	2.0	2.1	2.2	.....	2.2
26	4.3	2.5	3.0	5.9	3.55	2.7	2.25	2.0	2.2	2.2	2.3	2.25
27	4.0	2.5	3.1	5.4	3.5	2.6	2.2	.....	2.25	.....	2.3	2.3
28	3.8	2.6	3.3	5.0	3.5	2.65	2.3	.....	2.2	.....	2.3	2.3
29	6.0	.....	3.6	4.7	3.6	2.65	2.2	2.0	2.2	.....	2.3	2.25
30	6.0	.....	4.0	4.6	3.5	2.6	2.3	2.0	2.2	2.2	2.3	2.25
31	5.8	.....	4.2	.....	3.5	.....	2.2	.....	.....	2.2	.....	2.25

Daily discharge, in second-feet, of Rock Creek at Goodyear Bar, Cal., for 1910–11.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1910.				1910.				1910.			
1	.....	3.2	2.5	11	.....	7	52	21	.....	7	8.5
2	.....	3.2	2.5	12	.....	6	19	22	.....	7	7
3	.....	3.2	62	13	.....	6	19	23	.....	5	7
4	.....	3.5	43	14	.....	6	14	24	.....	4	7
5	.....	3.5	24	15	.....	6	14	25	.....	4	6
6	.....	3.5	5	16	.....	6	10	26	.....	4	5
7	.....	3.5	5	17	.....	7	10	27	.....	3.5	5
8	.....	5	5	18	.....	7	10	28	.....	3	5
9	.....	6	7	19	.....	7	8.5	29	.....	3	5
10	.....	7	10	20	.....	7	8.5	30	3.2	2.5	5
								31	3.2	.....	5

Daily discharge, in second-feet, of Rock Creek at Goodyear Bar, Cal., for 1910–11—Contd.

Day.	Jan.	Feb.	Mar.	Apr	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	5	399	7	168	168	72	6	1.7	0.5	1.7	1.7	2.5
2	5	354	10	235	122	78	7	.8	.5	1.7	1.7	2.5
3	4.2	312	19	291	108	83	5	.8	.8	1.7	1.7	2.1
4	4.2	218	26	235	95	72	4.2	1.0	.8	2.5	1.7	2.1
5	3.5	83	26	235	137	72	5	1.0	1.0	2.5	1.7	2.1
6	3.5	14	26	253	108	72	4.2	1.0	1.0	2.5	1.7	2.1
7	3.5	5	43	218	95	72	4.2	1.4	1.0	2.5	1.7	2.1
8	10	5	62	168	95	67	3.5	1.0	.9	2.1	1.7	2.1
9	7	5	62	137	95	62	4.2	.9	.8	2.1	2.5	1.7
10	10	7	108	152	83	62	4.2	.8	.8	2.1	14	1.7
11	6	5	108	137	95	52	3.5	.8	.8	1.9	3.0	1.7
12	12	5	137	137	108	52	3.5	.8	.8	1.7	2.8	1.7
13	43	7	83	184	95	52	3.5	.8	.8	1.7	2.5	1.7
14	19	7	72	137	89	43	2.5	.5	.8	1.7	2.5	2.1
15	14	5	43	122	83	34	2.3	.5	1.0	1.7	8.5	2.1
16	10	7	26	108	78	30	2.1	.5	1.0	1.7	4.2	2.1
17	14	7	26	95	86	26	2.5	.5	1.0	1.7	16	2.1
18	14	7	34	95	95	22	2.1	.5	1.0	1.7	2.5	2.1
19	19	5	19	108	83	19	2.1	.5	1.0	1.7	2.5	2.1
20	168	5	19	137	95	14	2.1	.5	.8	1.7	3.0	2.1
21	108	5	19	201	108	14	2.1	.5	.8	1.7	2.5	2.1
22	62	5	26	253	95	12	2.1	.5	1.0	1.7	2.5	2.1
23	14	7	26	291	108	12	2.1	.5	1.0	1.7	2.1	2.1
24	312	5	14	312	95	12	2.5	.5	1.0	1.7	2.5	1.9
25	272	5	14	399	83	10	2.5	.5	1.0	1.7	2.5	1.7
26	184	5	26	520	78	10	2.1	.5	1.7	1.7	2.5	2.1
27	137	5	34	399	72	7	1.7	.5	2.1	1.7	2.5	2.5
28	108	7	52	312	72	8.5	2.5	.5	1.7	1.7	2.5	2.5
29	545	.....	83	253	83	8.5	1.7	.5	1.7	1.7	2.5	2.1
30	545	.....	137	235	72	7	2.5	.5	1.7	1.7	2.5	2.1
31	495	.....	168	.....	72	.....	1.7	.5	.....	1.7	.....	2.1

NOTE.—Daily discharge 1910–11 determined from a rating curve well defined below 300 second-feet. Discharge interpolated for days on which gage was not read; discharge Dec. 1 and 2, 1910, estimated.

Monthly discharge of Rock Creek at Goodyear Bar, Cal., for 1910–11.

[Drainage area, 10.8 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
November	7	2.5	4.99	0.462	0.52	297	D.
December	62	2.5	12.8	1.19	1.37	787	C.
1911.							
January	545	3.5	102	9.44	10.88	6,270	B.
February	399	5	53.8	4.98	5.19	2,990	B.
March	168	7	50.2	4.65	5.36	3,090	B.
April	520	95	218	20.2	22.54	13,000	B.
May	168	72	95.2	8.81	10.16	5,850	B.
June	83	7	38.6	3.57	3.98	2,300	C.
July	7	1.7	3.14	.291	.34	193	D.
August	1.7	.5	.70	.065	.07	43	D.
September	2.1	.5	1.03	.095	.11	61	D.
October	2.5	1.7	1.85	.171	.20	114	D.
November	16.	1.7	3.41	.316	.35	203	D.
December	2.5	1.7	2.07	.192	.22	127	D.
The year	545	.5	47.2	4.37	59.40	34,200	

GOODYEAR CREEK AT GOODYEAR BAR, CAL.

Location.—At trail bridge, in the W. ½ SW. ¼ sec. 5, T. 19 N., R. 10 E., in the Tahoe National Forest, 300 feet above junction with North Fork of Yuba River and half a mile north of Goodyear Bar.

Records available.—October 30, 1910, to December 31, 1911.

Drainage area.—12.2 square miles.

Gage.—Vertical staff fastened to an alder tree on left bank 200 feet above bridge.

Channel.—Solid rock and gravel; appears permanent.

Discharge measurements.—Made from bridge or by wading.

Diversions.—Three small irrigation ditches, having a total capacity of about 7½ second-feet, head above the station.

Accuracy.—Rating curve is well defined at low and medium stages and results are excellent. The high water record is approximate.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Goodyear Creek at Goodyear Bar, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 13	Fred G. Wood	1.98	30
25	do	3.2	174
26	do	2.65	102
27	do	2.37	68
Apr. 23	G. T. Peekema	3.15	167
June 15	do	2.25	54
Nov. 3	do	1.51	7.0

Daily gage height, in feet, of Goodyear Creek at Goodyear Bar, Cal., for 1911.

[W. S. Barton, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.6	5.0	3.5	3.8	3.0	2.75	1.75	1.55	1.5	1.5	1.5	.....
2	1.6	4.8	3.9	3.9	3.0	2.85	1.8	1.55	1.5	1.5	1.5	1.5
3	1.6	4.2	4.1	4.2	2.8	2.8	1.8	1.55	1.5	1.45	1.5	1.5
4	1.6	4.0	4.8	4.0	2.7	2.7	1.75	1.55	1.5	1.5	1.5	1.5
5	1.6	3.8	5.0	3.9	3.4	.....	1.75	1.55	1.5	.....	1.5	.....
6	1.6	3.0	5.0	3.9	3.1	.....	1.7	1.5	.....	1.5	1.5	1.5
7	1.6	2.9	5.2	3.6	3.05	2.7	1.7	1.5	1.5	1.5	1.5	1.5
8	1.7	2.8	5.2	3.5	3.0	2.75	1.75	1.5	.....	1.5	1.5	1.5
9	1.9	2.8	5.0	3.4	3.0	2.7	1.75	.....	1.5	1.5	1.55	1.5
10	1.9	2.8	4.9	3.5	3.35	2.7	1.7	1.5	1.5	1.5	2.05	1.5
11	1.9	2.4	4.9	3.4	3.65	2.45	1.7	1.5	1.5	.....	1.6	1.5
12	1.9	2.4	5.0	3.5	3.15	2.5	1.7	1.5	1.5	1.5	.....	1.5
13	1.9	2.6	5.0	3.7	3.1	2.4	1.7	1.5	1.5	1.5	1.55	1.5
14	2.0	2.6	4.2	3.5	3.0	2.3	1.65	1.55	1.5	1.5	1.55	1.5
15	.....	2.6	4.0	3.2	2.9	2.35	.....	1.5	1.5	1.5	1.85	1.5
16	.....	2.6	3.7	3.2	2.8	2.2	1.6	1.5	1.5	1.5	1.6	1.5
17	1.9	2.6	3.7	3.0	.....	.....	1.6	1.5	1.5	.....	1.6	1.5
18	2.0	3.0	3.7	2.9	3.7	.....	1.6	1.5	.....	1.5	1.65	1.5
19	2.2	3.2	3.5	3.1	2.9	2.1	1.6	1.5	1.5	1.5	1.5	1.5
20	2.4	3.0	3.5	3.0	3.1	1.95	.....	.....	1.5	1.5	1.5	1.5
21	3.0	2.7	3.5	3.1	3.3	1.9	1.6	.....	1.5	1.5	1.45	1.5
22	2.9	2.7	3.0	3.2	3.1	1.9	.....	.....	1.5	1.5	1.5	1.5
23	3.0	2.8	2.9	3.4	3.3	1.9	1.6	1.5	1.5	1.5	1.5	1.5
24	4.0	3.0	2.9	3.5	3.1	1.95	1.6	.....	1.5	1.5	1.5	.....
25	3.2	3.0	2.9	3.9	2.9	1.9	1.55	1.5	1.5	1.5	.....	1.45
26	2.65	3.0	3.1	4.3	2.85	1.9	1.55	1.5	1.5	1.5	1.5	1.45
27	3.2	3.1	3.3	4.1	2.9	1.85	1.6	.....	1.5	.....	1.5	1.5
28	3.6	3.0	3.3	3.8	2.8	1.85	1.55	.....	1.5	.....	1.5	1.6
29	5.5	.....	3.4	3.3	2.9	1.8	1.55	1.5	1.5	.....	1.5	1.5
30	6.4	.....	3.7	3.3	2.8	1.8	1.55	1.5	1.5	1.5	1.5	1.5
31	5.2	.....	3.9	.....	2.75	.....	1.55	.....	.....	1.5	.....	1.5

Daily discharge, in second-feet, of Goodyear Creek at Goodyear Bar, Cal., for 1910–11.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1910.				1910.				1910.			
1		7	7	11		9	81	21		9	20
2		7	7	12		9	40	22		9	24
3		7	174	13		9	40	23		24	20
4		7	122	14		9	32	24		21	17
5		7	70	15		7	32	25		18	17
6		7	17	16		7	24	26		15	14
7		7	17	17		7	24	27		11	14
8		9	17	18		7	24	28		10	11
9		11	24	19		9	24	29		9	11
10		11	32	20		9	20	30	7	7	11
								31	7		11

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	7	610	222	280	145	112	14	6	4	4	4	4
2	7	545	300	300	145	124	17	6	4	4	4	4
3	7	375	350	375	118	118	17	6	4	3	4	4
4	7	325	545	325	105	105	14	6	4	4	4	4
5	7	280	610	300	205	105	14	6	4	4	4	4
6	7	145	610	300	159	105	11	4	4	4	4	4
7	7	131	680	240	152	105	11	4	4	4	4	4
8	11	118	680	222	145	112	14	4	4	4	4	4
9	24	118	610	205	145	105	14	4	4	4	6	4
10	24	118	575	222	197	105	11	4	4	4	36	4
11	24	70	575	205	250	76	11	4	4	4	7	4
12	24	70	610	222	166	81	11	4	4	4	6	4
13	24	93	610	260	159	70	11	4	4	4	6	4
14	32	93	375	222	145	59	9	6	4	4	6	4
15	30	93	325	174	131	64	8	4	4	4	20	4
16	27	93	260	174	118	49	7	4	4	4	7	4
17	24	93	260	145	189	46	7	4	4	4	7	4
18	32	145	260	131	260	43	7	4	4	4	9	4
19	49	174	222	159	131	40	7	4	4	4	4	4
20	70	145	222	145	159	28	7	4	4	4	4	4
21	145	105	222	159	189	24	7	4	4	4	3	4
22	131	105	145	174	159	24	7	4	4	4	4	4
23	145	118	131	205	189	24	7	4	4	4	4	4
24	325	145	131	222	159	28	7	4	4	4	4	3
25	174	145	131	300	131	24	6	4	4	4	4	3
26	99	145	159	400	124	24	6	4	4	4	4	3
27	174	159	189	350	131	20	7	4	4	4	4	4
28	240	145	189	280	118	20	6	4	4	4	4	7
29	790	.....	205	189	131	17	6	4	4	4	4	4
30	1,180	.....	260	189	118	17	6	4	4	4	4	4
31	680	.....	300	.....	112	.....	6	4	.....	4	.....	4

NOTE.—Daily discharge 1910–11 determined from a rating curve well defined below 300 second-feet. Discharge interpolated for days on which gage was not read except for Dec. 1 and 2, 1910, which was estimated.

Monthly discharge of Goodyear Creek at Goodyear Bar, Cal., for 1910–11.

[Drainage area, 12.2 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
1910.							
November	24	7	9.8	0.803	0.90	583	C.
December	174	7	32.2	2.64	3.04	1,980	B.
1911.							
January	1,180	7	146	12.0	13.83	8,980	C.
February	610	70	175	14.3	14.89	9,720	A.
March	680	131	354	29.0	33.43	21,800	B.
April	400	131	236	19.3	21.53	14,000	B.
May	260	105	154	12.6	14.53	9,470	A.
June	124	17	62.5	5.12	5.71	3,720	A.
July	17	6	9.5	.779	.90	584	C.
August	6	4	4.4	.361	.42	270	D.
September	4	4	4.0	.328	.37	238	D.
October	4	3	4.0	.328	.38	246	D.
November	36	3	6.3	.516	.58	375	D.
December	7	3	4.0	.328	.38	246	D.
The year	1,180	3	96.2	7.89	106.95	69,600	

BEAR RIVER NEAR COLFAX, CAL.

Location.—At Pacific Gas & Electric Co.'s diversion dam, in sec. 22, T. 15 N., R. 9 E., about one-half mile below mouth of Greenhorn River and about 3 miles north of Colfax.

Records available.—November 1 to December 31, 1911.

Drainage area.—Not measured.

Gage.—October 20, 1911, a vertical staff was installed on left bank about 500 feet above the dam. This gage was read during November and December, 1911.

Channel.—Gravel and will shift.

Discharge measurements.—Made by wading during 1911. December 9, 1911, a car and cable were installed at the gage above the dam.

Diversions and storage.—Water is both diverted and stored above the station.

Cooperation.—Gage-height record was furnished by Pacific Gas & Electric Co., through James H. Wise, assistant general manager.

Discharge measurements of Bear River near Colfax, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 20	J. E. Stewart	1.41	38
Dec. 9	F. C. Ebert	1.38	34

Daily gage height, in feet, of Bear River near Colfax, Cal., for 1911.

[J. H. Chubb, observer.]

Day.	Nov.	Dec.	Day.	Nov.	Dec.
1	1.41	1.44	16	1.85	1.33
2	1.42	1.38	17	1.60	1.45
3	1.42	1.35	18	1.61	1.33
4	1.47	1.36	19	1.60	1.32
5	1.71	1 35	20	1.50	1.30
6	1.72	1.36	21	1.49	1.19
7	1.43	1.34	22	1.50	1.24
8	1.42	1.30	23	1.49	1.35
9	1.50	1.34	24	1.48	1.30
10	2.40	1.33	25	1.48	1.20
11	1.60	1.34	26	1.47	1.30
12	1.62	1.30	27	1.49	1.32
13	1.61	1.33	28	1.47	1.40
14	1.60	1.30	29	1.48	1.55
15	1.63	1.32	30	1.45	1.50
			31		1.51

BEAR RIVER AT VAN TRENT,[1] CAL.

Location.—Below highway bridge at McCourtney crossing, in the SE. ¼ sec. 21, T. 14 N., R. 6 E., 1 mile below Van Trent and 8 miles above Wheatland.

Records available.—October 8, 1904, to December 31, 1911.

Drainage area.—263 square miles.

Gage.—Staff in five sections on left bank 500 feet below bridge.

Channel.—Solid rock, bowlders, and gravel. Shifts at high water.

Discharge measurements.—In November, 1909, the car and cable were removed; since this date measurements have been made by wading.

Diversions and storage.—Water is diverted above station for power and irrigation. Storage is also developed on the headwaters of the stream.

Accuracy.—Results good at medium and low stages. Estimates for high water are approximate, as rating curve is not well defined.

Discharge measurements of Bear River at Van Trent, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 25[a]	J. E. Stewart	2.04	234
Oct. 4[b]	do	1.11	40

[a] Measurement by wading 100 feet above gage. [b] Measurement by wading 200 feet above gage.

Daily gage height, in feet, of Bear River at Van Trent, Cal., for 1911.

[Hermann Ernestus, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.2	8.6	4.25	4.0	2.6	1.9	1.3	1.0	1.0	1.1	1.2	1.2
2	1.2	7.2	5.1	4.1	2.6	1.9	1.3	1.0	1.0	1.1	1.1	1.2
3	1.2	6.5	5.0	4.0	2.6	1.9	1.4	1.0	1.0	1.1	1.0	1.1
4	1.2	6.3	8.2	3.9	2.6	1.8	1.3	1.0	1.1	1.1	1.0	1.1
5	1.2	6.3	7.0	5.9	2.6	1.7	1.3	1.2	1.1	1.1	1.3	1.0

[1] Known formerly as "above Wheatland."

Daily gage height, in feet, of Bear River at Van Trent, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
6	1.2	6.8	9.8	6.4	2.8	1.7	1.3	1.1	1.1	1.3	1.3	1.1
7	1.2	5.7	13.0	4.8	2.6	1.9	1.2	1.1	1.1	1.3	1.2	1.1
8	1.2	5.2	8.5	4.3	2.5	2.0	1.2	1.2	1.1	1.2	1.1	1.0
9	1.2	5.0	6.7	4.1	2.5	1.9	1.2	1.1	1.1	1.1	1.0	1.0
10	2.5	4.8	6.5	4.2	2.5	1.8	1.2	1.1	1.1	1.3	1.85	1.0
11	1.8	6.9	5.7	3.8	2.4	1.7	1.2	1.1	1.1	1.3	1.8	1.0
12	7.75	5.3	5.3	3.6	2.3	1.7	1.2	1.1	1.1	1.3	1.3	1.0
13	7.1	7.2	4.9	3.5	2.3	1.7	1.2	1.1	1.1	1.3	1.3	1.0
14	12.7	5.6	4.7	3.3	2.3	1.7	1.1	1.1	1.0	1.2	1.1	1.0
15	7.2	4.9	4.5	3.1	2.3	1.6	1.1	1.1	1.0	1.2	1.1	1.0
16	4.0	4.6	4.4	3.0	2.3	1.6	1.1	1.1	1.0	1.1	1.8	.9
17	3.4	4.4	4.3	2.9	2.2	1.6	1.1	1.1	1.0	1.1	1.6	.9
18	3.0	4.3	4.2	2.9	2.2	1.6	1.1	1.1	1.0	1.0	1.5	1.1
19	2.8	4.2	4.2	2.9	2.4	1.6	1.0	1.1	1.0	1.0	1.4	1.1
20	13.7	4.1	4.2	2.9	2.2	1.5	1.0	1.1	1.0	1.0	1.3	1.0
21	7.2	4.0	4.2	2.8	2.2	1.5	1.0	1.1	1.0	.9	1.3	1.0
22	4.9	3.9	4.1	2.8	2.1	1.5	1.0	1.1	.9	.9	1.2	.9
23	4.3	3.8	4.1	2.8	2.1	1.4	1.0	1.1	.9	1.0	1.3	.9
24	11.95	3.8	4.1	2.8	2.1	1.4	1.0	1.1	.9	1.0	1.2	.9
25	10.9	3.7	4.1	2.9	2.1	1.4	1.0	1.1	1.0	1.2	1.1	.9
26	8.2	3.7	4.0	2.9	2.0	1.4	1.0	1.1	1.0	1.1	1.1	1.0
27	6.3	3.7	3.9	2.9	2.0	1.4	1.0	1.1	1.0	1.3	1.1	1.0
28	9.3	3.9	3.9	2.9	2.0	1.4	1.0	1.1	1.0	1.5	1.1	1.0
29	9.1	.....	3.9	2.8	1.9	1.4	1.0	1.1	1.0	1.4	1.1	1.1
30	13.5	.....	4.0	2.7	1.9	1.3	1.0	1.0	1.0	1.3	1.2	1.1
31	16.7	.....	4.0	.....	1.9	.....	1.0	1.0	.....	1.2	.....	1.2

Daily discharge, in second-feet, of Bear River at Van Trent, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	53	4,300	994	880	361	178	66	32	32	42	53	53
2	53	2,910	1,430	925	361	178	66	32	32	42	42	53
3	53	2,350	1,370	880	361	178	81	32	32	42	32	42
4	53	2,200	3,860	835	361	156	66	32	42	42	32	42
5	53	2,200	2,750	1,920	361	135	66	53	42	42	66	32
6	53	2,590	5,860	2,280	420	135	66	42	42	66	66	42
7	53	1,790	12,000	1,260	361	178	53	42	42	66	53	42
8	53	1,480	4,180	1,020	332	201	53	53	42	53	42	32
9	53	1,370	2,510	925	332	178	53	42	42	42	32	32
10	332	1,260	2,350	971	332	156	53	42	42	66	167	32
11	156	2,670	1,790	791	303	135	53	42	42	66	156	32
12	3,440	1,540	1,540	709	276	135	53	42	42	66	66	32
13	2,830	2,910	1,320	670	276	135	53	42	42	66	66	32
14	11,300	1,720	1,210	594	276	135	42	42	32	53	42	32
15	2,910	1,320	1,110	521	276	115	42	42	32	53	42	32
16	880	1,160	1,060	486	276	115	42	42	32	42	156	23
17	632	1,060	1,020	452	250	115	42	42	32	42	115	23
18	486	1,020	971	452	250	115	42	42	32	32	97	42
19	420	971	971	452	303	115	32	42	32	32	81	42
20	13,700	925	971	452	250	97	32	42	32	32	66	32
21	2,910	880	971	420	250	97	32	42	32	23	66	32
22	1,320	835	925	420	225	97	32	42	23	23	53	23
23	1,020	791	925	420	225	81	32	42	23	32	66	23
24	9,640	791	925	420	225	81	32	42	23	32	53	23
25	7,620	749	925	452	225	81	32	42	32	53	42	23
26	3,860	749	880	452	201	81	32	42	32	42	42	32
27	2,200	749	835	452	201	81	32	42	32	66	42	32
28	5,160	835	835	452	201	81	32	42	32	97	42	32
29	4,900	.....	835	420	178	81	32	42	32	81	42	42
30	13,200	.....	880	390	178	66	32	32	32	66	53	42
31	22,200	.....	880	.....	178	.....	32	32	.....	53	.....	53

NOTE.—Daily discharge determined from a rating curve fairly well defined below 2,000 second-feet, and not at all defined above that discharge.

Monthly discharge of Bear River at Van Trent, Cal., for 1911.

[Drainage area, 263 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	22,200	53	3,600	13.70	15.79	221,000	C.
February	4,300	749	1,580	6.01	6.26	87,800	C.
March	12,000	835	1,910	7,26	8,37	117,000	C.
April	2,280	390	726	2.76	3.08	43,000	B.
May	420	178	278	1.06	1.22	17,100	B.
June	178	66	124	.471	.53	7,380	B.
July	81	32	45.4	.173	.20	2,790	C.
August	53	32	40.8	.155	.18	2,510	C.
September	42	23	34.4	.131	.15	2,050	C.
October	97	23	50.2	.191	.22	3,090	C.
November	167	32	65.8	.250	.28	3,920	C.
December	53	23	34.9	.133	.15	2,150	C.
The year	22,200	23	705	2.68	36.43	510,000	

AMERICAN RIVER AND TRIBUTARIES.

NORTH FORK OF AMERICAN RIVER NEAR COLFAX, CAL.

Location.—At bridge on Colfax and Forest Hill road, in the SW. ¼ sec. 19, T. 14 N., R. 10 E., 150 feet below mouth of Shirttail Canyon Creek, 11 miles above junction with the Middle Fork and 5 miles southeast of Colfax.

Records available.—August 16 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in three sections on right bank, about 50 feet below bridge.

Channel.—Gravel and small bowlders—tailings from placer mining; will shift at high water.

Discharge measurements.—Made from bridge or by wading.

Discharge measurements of North Fork of American River near Colfax, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 16[a]	F. C. Ebert	3.29	122
Dec. 10[b]	Lasley Lee	3.10	75

[a] Made by wading 300 feet below gage. [b] Made by wading 150 feet below gage.

Daily gage height, in feet, of North Fork of American River near Colfax, Cal., for 1911.

[C. J. McDonald, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1		3.2	3.25	3.10	3.18	16	3.3	3.2	3.10	3.35	3.10
2		3.2	3.25	3.10	3.18	17	3.3	3.2	3.10	3.20	3.15
3		3.2	3.25	3.10	3.15	18	3.3	3.2	3.12	3.20	3.10
4		3.2	3.25	3.10	3.18	19	3.3	3.2	3.12	3.18	3.10
5		3.2	3.25	3.10	3.15	20	3.3	3.2	3.15	3.18	3.15
6		3.2	3.25	3.10	3.18	21	3.3	3.2	3.15	3.18	3.10
7		3.2	3.25	3.10	3.15	22	3.3	3.2	3.12	3.18	3.10
8		3.2	3.25	3.10	3.15	23	3.3	3.2	3.12	3.18	3.12
9		3.2	3.28	3.10	3.18	24	3.2	3.2	3.12	3.18	3.10
10		3.2	3.25	3.75	3.10	25	3.2	3.2	3.10	3.18	3.10
11		3.2	3.22	3.75	3.10	26	3.2	3.2	3.10	3.12	3.10
12		3.2	3.25	3.20	3.10	27	3.2	3.2	3.10	3.12	3.10
13		3.2	3.18	3.22	3.10	28	3.2	3.2	3.10	3.12	3.18
14		3.2	3.18	3.15	3.10	29	3.2	3.2	3.10	3.18	3.15
15		3.2	3.05	3.22	3.10	30	3.2	3.2	3.10	3.18	3.15
						31	3.2	.....	3.30	.....	3.15

AMERICAN RIVER AT FAIROAKS, CAL.

Location.—At highway bridge, 1,500 feet northwest of Southern Pacific Co.'s railroad station at Fairoaks Bridge and half a mile southeast of Fairoaks.

Records available.—November 3, 1904, to December 31, 1911.

Drainage area.—1,910 square miles.

Gage.—Painted on right abutment of bridge near downstream end, with a vertical staff for low water. The position of the gage has been changed several times since the station was established, but no change has been made in its datum.

Channel.—Gravel and small bowlders; shifts slightly at high water.

Discharge measurements.—Made from downstream side of bridge and by wading.

Diversions.—Water is diverted and stored for power and irrigation above the station.

Accuracy.—A comparison of the hydrographs of daily gage heights at Folsom and at Fairoaks for 1911 indicates that both records are good for the first four months, but not from May 1 to August 9. Comparison of observer's with hydrographer's readings on May 6 and July 8 indicates that the Fairoaks records are much in error on these two days and hence, inferentially, for the rest of the above-noted period. Comparisons with records of stations on other streams in a situation similar to that of the American River, indicate that the Folsom record is the better. The values published in the first table of gage heights are uncorrected gage heights. The gage heights published in the second table are corrected by comparison with the record at Folsom.

The record at Fairoaks from August 10 to September 30, 1911, is considered fairly satisfactory. It does not agree with the Folsom records, but these are known to be poor at extreme low stage, as part of the water is by-passed around the gage. The stage during this period did not vary greatly. The measurement made October 3 confirms the record for the last part of the period, and preliminary estimates of discharge at Placerville and Colfax tend to confirm the gage heights August 10 to September 30.

Readings made by a new observer October 1 to December 31 are about 2 feet too high as compared with gage heights at Folsom and preliminary estimates of discharge at Placerville, Colfax, and East Auburn, and accordingly are not published. The rating curves developed for 1911 are good.

Discharge measurements of American River at Fairoaks, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 12	H. D. McGlashan	12.90	35,000
29	do	9.35	17,500
29	do	9.95	21,000
30	do	19.90	72,700
31	do	21.90	78,600
Mar. 22	J. E. Stewart	7.38	9,530
May 6	do	8.54	14,200
July 8	do	5.48	4,880
Oct. 3[a]	do	2.58	361

[a] Made by wading 300 feet below bridge.

Daily gage height, in feet, of American River at Fairoaks, Cal., for 1911.

[M. J. Ferry, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1	2.3	13.7	5.2	9.6	8.0	8.7	6.9	3.7	2.5	.....
2	2.3	10.6	6.3	9.8	8.1	8.8	6.8	3.6	2.5	.....
3	2.3	9.85	7.1	9.8	8.1	8.8	6.7	3.5	2.5	2.58
4	2.3	9.3	10.0	9.0	8.1	9.0	6.6	3.4	2.6	.....
5	2.2	8.9	10.2	10.3	8.1	9.1	6.5	3.5	2.5	.....
6	2.2	8.1	9.1	11.8	8.1	9.3	6.4	3.5	2.5	.....
7	2.2	7.5	14.2	10.0	8.0	9.7	6.6	3.5	2.5	.....
8	2.1	7.3	12.6	9.8	8.0	9.6	6.3	3.5	2.5	.....
9	2.1	6.9	9.7	9.5	7.9	9.6	6.1	3.5	2.6	.....
10	3.75	6.3	9.2	9.0	7.7	9.5	6.0	2.7	2.5	.....
11	5.95	8.3	8.6	8.2	7.7	9.4	5.8	2.7	2.5	.....
12	11.0	9.5	7.8	8.2	7.8	9.3	5.7	2.7	2.5	.....
13	11.2	8.2	7.5	8.0	7.8	9.1	5.5	2.8	2.5	.....
14	11.6	7.9	7.2	7.6	7.9	8.9	5.5	2.7	2.5	.....
15	9.6	7.5	7.0	7.1	7.9	8.7	5.3	2.8	2.5	.....
16	6.05	7.5	6.9	6.8	7.9	8.5	5.3	2.7	2.5	.....
17	5.2	7.2	6.9	6.8	8.0	8.3	5.1	2.7	2.5	.....
18	4.9	7.0	7.0	7.0	8.2	8.2	5.0	2.7	2.5	.....
19	4.8	6.7	7.0	7.3	8.4	7.9	4.9	2.6	2.5	.....
20	9.8	6.1	7.0	8.4	8.6	7.6	4.8	2.6	2.5	.....
21	8.0	5.5	7.0	8.7	8.7	7.3	4.6	2.6	2.4	.....
22	6.5	5.5	7.2	8.8	8.8	7.2	4.6	2.6	2.4	.....
23	6.7	5.2	7.4	9.0	8.7	7.0	4.5	2.5	2.4	.....
24	10.15	5.1	7.6	9.1	8.6	6.7	4.2	2.6	2.4	.....
25	12.3	5.0	7.7	9.3	8.9	6.3	4.2	2.5	2.4	.....
26	10.4	5.1	7.8	9.7	8.7	6.1	4.1	2.7	2.4	.....
27	8.5	5.0	7.9	9.4	8.8	6.2	4.2	2.5	2.5	.....
28	8.3	5.1	8.0	9.3	9.0	6.4	4.0	2.6	2.5	.....
29	10.5	.....	8.1	8.7	8.8	6.9	3.9	2.6	2.5	.....
30	19.05	.....	8.5	8.5	8.7	7.2	3.9	2.6	2.5	.....
31	19.7	.....	9.0	.....	8.6	.....	3.8	2.5	.....	.....

NOTE.—Gage heights May 1 to Aug. 9 subject to error. See description. Gage heights Jan. 10–16, 19–21, 24–27, 29 to Feb. 1, determined graphically.

Corrected daily gage height, in feet, of American River at Fairoaks, Cal., for 1911.

Day.	May.	June.	July.	Aug.	Day.	May.	June.	July.	Aug.
1	8.2	9.0	6.0	3.0	16	8.1	10.6	4.8	.....
2	8.4	9.5	6.0	3.0	17	7.8	10.6	4.7	.....
3	8.5	10.1	6.0	2.9	18	7.5	10.6	4.6	.....
4	8.9	10.5	5.9	2.9	19	7.6	10.5	4.4	.....
5	9.8	10.7	5.8	2.9	20	7.9	9.9	4.2	.....
6	8.6	10.9	5.8	2.9	21	8.4	9.2	4.1	.....
7	8.4	10.6	5.7	2.8	22	9.2	8.3	3.9	.....
8	8.4	10.5	5.5	2.8	23	10.2	7.5	3.7	.....
9	8.4	10.5	5.2	2.8	24	10.6	6.9	3.6	.....
10	8.3	10.6	5.0	.....	25	8.9	6.5	3.6	.....
11	8.5	10.9	5.0	.....	26	8.6	6.3	3.6	.....
12	8.9	11.2	4.9	.....	27	8.7	6.6	3.5	.....
13	9.0	11.0	4.9	.....	28	9.0	7.3	3.3	.....
14	8.7	10.8	4.9	.....	29	9.2	6.9	3.2	.....
15	8.4	10.7	4.8	.....	30	9.4	6.5	3.2	.....
					31	9.7	.....	3.1	.....

NOTE.—Gage heights corrected by comparison with Folsom gage heights for use in determining the daily discharge.

Daily discharge, in second-feet, of American River at Fairoaks, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1	525	37,300	4,120	18,000	12,400	15,500	5,930	720	310	.....
2	525	22,400	6,690	18,900	13,200	17,600	5,930	720	310	.....
3	525	19,100	8,930	18,900	13,500	20,200	5,930	615	310	358
4	525	16,700	19,700	15,500	15,100	21,900	5,690	615	370	.....
5	455	15,100	20,600	21,100	18,900	22,800	5,450	615	310	.....
6	455	12,100	15,900	28,000	13,900	23,800	5,450	615	310	.....
7	455	10,200	39,800	19,700	13,200	22,400	5,210	520	310	.....
8	390	9,530	31,900	18,900	13,200	21,900	4,760	520	310	.....
9	390	8,340	18,400	17,600	13,200	21,900	4,120	520	370	.....
10	2,280	6,690	16,300	15,500	12,800	22,400	3,720	440	310	.....
11	6,850	12,800	13,900	12,400	13,500	23,800	3,720	440	310	.....
12	24,800	17,600	11,100	12,400	15,100	25,200	3,530	440	310	.....
13	25,700	12,400	10,200	11,800	15,500	24,200	3,530	520	310	.....
14	27,500	11,400	9,230	10,500	14,300	23,300	3,530	440	310	.....
15	18,800	10,200	8,630	8,930	13,200	22,800	3,340	520	310	.....
16	7,090	10,200	8,340	8,050	12,100	22,400	3,340	440	310	.....
17	5,100	9,230	8,340	8,050	11,100	22,400	3,160	440	310	.....
18	4,440	8,630	8,630	8,630	10,200	22,400	2,980	440	310	.....
19	4,220	7,770	8,630	9,530	10,500	21,900	2,640	370	310	.....
20	19,600	6,180	8,630	13,200	11,400	19,300	2,320	370	310	.....
21	12,800	4,760	8,630	14,300	13,200	16,300	2,160	370	260	.....
22	8,220	4,760	9,230	14,700	16,300	12,800	1,850	370	260	.....
23	8,780	4,120	9,840	15,500	20,600	10,200	1,560	310	260	.....
24	21,100	3,920	10,500	15,900	22,400	8,340	1,420	370	260	.....
25	30,700	3,720	10,800	16,700	15,100	7,220	1,420	310	260	.....
26	12,200	3,920	11,100	18,400	13,900	6,690	1,420	440	260	.....
27	14,500	3,720	11,400	17,200	14,300	7,490	1,300	310	310	.....
28	13,800	3,920	11,800	16,700	15,500	9,530	1,050	370	310	.....
29	22,600	.....	12,100	14,300	16,300	8,340	935	370	310	.....
30	65,500	.....	13,500	13,500	17,200	7,220	935	370	310	.....
31	69,100	.....	15,500	.....	18,400	.....	825	310	.....	.....

NOTE.—Daily discharge determined from two well-defined curves; one applicable to Jan. 31 (the 1910 curve) and the other for the remainder of the year.

Monthly discharge of American River at Fairoaks, Cal., for 1911.

[Drainage area, 1,910 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	69,100	390	13,900	7.28	8.39	855,000	B.
February	37,300	3,720	10,600	5.55	5.78	589,000	B.
March	39,800	4,120	13,000	6.81	7.85	799,000	B.
April	28,000	8,050	15,100	7.91	8.82	898,000	B.
May	22,400	10,200	14,500	7.59	8.75	892,000	B.
June	25,200	6,690	17,700	9.27	10.34	1,050,000	C.
July	5,930	825	3,200	1.68	1.92	197,000	C.
August	720	310	459	.240	.28	28,200	C.
September	370	260	304	.159	.18	18,100	C.
October	.....	.....	350	.183	.21	21,500	C.
November	.....	.....	430	.225	.25	25,600	C.
December	.....	.....	400	.209	.24	24,600	C.
The year	69,100	.....	7,460	3.91	53.01	5,400,000	

NOTE.—Mean discharge October, November, and December is the combined discharge (preliminary estimates) of North Fork of American River near Colfax, Middle Fork of American River near East Auburn, and South Fork of American River near Placerville, plus an assumed inflow of 20 to 30 second-feet.

MIDDLE FORK OF AMERICAN RIVER NEAR EAST AUBURN, CAL.

Location.—At Mountain Quarry Co.'s plant, about 1½ miles above the junction with North Fork of American River and 3½ miles northeast of Auburn, in the SE. ¼ sec. 6, T. 12 N., R. 9 E.

Records available.—October 22 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Staff in two sections on left bank at pump house.

Channel.—Gravel and small bowlders; will shift at high stages.

Discharge measurements.—Made from car and cable 300 feet below gage and by wading.

Discharge measurements of Middle Fork of American River near East Auburn, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 19[a]	J. E. Stewart	1.60	105
Dec. 11[b]	F. C. Ebert	1.88	161

[a] Made by wading 150 feet below gage. [b] Made by wading 300 feet below gage.

Daily gage height, in feet, of Middle Fork of American River near East Auburn, Cal., for 1911.

[W. B. Arndt, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	1.7	1.7	11	.....	2.3	1.9	21	.....	1.8	1.9
2	.....	1.7	1.7	12	.....	2.0	1.8	22	1.6	1.7	1.9
3	.....	1.7	1.7	13	.....	1.9	1.8	23	1.6	1.7	1.9
4	.....	1.7	1.7	14	.....	1.9	1.8	24	1.6	1.7	1.9
5	.....	1.7	1.7	15	.....	1.9	1.8	25	1.7	1.7	1.9
6	.....	1.7	1.7	16	.....	2.0	1.8	26	1.9	1.7	1.9
7	.....	1.7	1.9	17	.....	2.0	1.9	27	1.8	1.7	1.9
8	.....	1.7	2.0	18	.....	1.8	1.9	28	1.7	1.7	1.9
9	.....	1.7	1.9	19	1.6	1.8	1.9	29	1.7	1.7	1.9
10	.....	2.4	1.9	20	.....	1.8	1.9	30	1.7	1.7	2.1
								31	1.7	.....	2.2

RUBICON RIVER AT RUBICON SPRINGS, CAL.

Location.—In the SE. ¼ sec. 31, T. 14 N., R. 16 E., at Rubicon Springs, about three-fourths of a mile above the mouth of Millers Creek.

Records available.—February 1, 1910, to August 31, 1911.

Drainage area.—31.6 square miles.

Gage.—Staff.

Channel.—Sand and gravel; fairly permanent.

Discharge measurements.—Made from car and cable.

Winter flow.—Affected by ice.

Accuracy.—Results excellent except for winter months.

Cooperation.—Records of daily discharge furnished by Stone & Webster Engineering Corporation.

Daily discharge, in second-feet, of Rubicon River at Rubicon Springs, Cal., for 1910–11.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.											
1	72	304	142	249	492	79	12	1	1	1	26
2	67	316	142	208	179	70	12	1	1	1	61
3	72	281	115	281	218	61	6	1	1	1	537
4	67	270	124	189	198	61	6	0	1	1	115
5	62	142	142	124	170	61	6	0	1	1	70
6	67	124	151	238	142	61	6	0	1	1	97
7	67	88	151	328	133	61	6	0	1	1	124
8	62	97	238	406	133	70	6	0	1	1	151
9	62	106	228	522	133	61	6	0	1	1	208
10	62	106	238	675	151	52	3	0	1	12	270
11	62	124	218	392	170	52	3	0	1	179	228
12	67	160	160	448	133	52	3	0	1	52	88
13	72	142	170	448	151	52	3	0	1	34	52
14	83	142	198	568	124	43	3	0	1	26	43
15	67	97	198	420	124	43	3	0	1	18	43
16	67	70	228	341	115	43	3	115	1	12	34
17	72	106	218	354	115	43	3	115	1	12	34
18	67	88	208	366	124	43	3	97	1	18	26
19	62	801	406	292	124	61	3	34	1	12	26
20	62	353	420	379	124	43	1	6	1	12	26
21	62	160	316	434	88	43	1	6	1	12	26
22	72	106	304	477	88	34	1	3	1	12	18
23	72	106	392	568	70	34	1	3	1	507	18
24	67	79	379	598	79	34	1	3	1	115	18
25	88	61	392	341	97	26	1	3	1	70	18
26	72	61	434	316	97	26	1	1	1	70	18
27	72	70	406	366	97	18	1	1	1	52	18
28	67	43	434	316	79	18	1	1	1	43	12
29	.....	61	249	420	97	18	1	1	1	34	12
30	.....	88	353	477	88	12	1	1	1	34	12
31	.....	106	.....	492	.....	12	1	.....	1	.....	12

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911.								
1	12	135	26	353	270	785	406	70
2	12	105	24	316	270	977	463	70
3	12	81	26	292	507	833	341	70
4	12	71	42	189	659	1,136	463	70
5	6	61	39	160	448	977	463	70
6	6	54	36	142	249	721	448	61
7	6	48	45	133	249	899	420	61
8	6	42	42	133	270	769	366	61
9	70	42	36	142	238	899	341	61
10	30	42	45	97	316	1,020	316	61
11	15	42	42	170	434	1,162	379	61
12	17	36	39	70	406	977	341	43
13	18	36	39	70	366	1,136	366	34
14	20	38	39	70	292	1,042	379	34
15	20	31	42	61	259	1,136	406	34
16	17	28	45	88	218	1,111	379	34
17	17	33	48	124	170	1,162	379	34
18	17	31	54	189	238	1,136	304	34
19	28	31	60	208	341	1,245	208	34
20	57	31	67	151	507	1,020	179	26
21	42	28	74	189	721	899	179	26
22	31	28	78	259	849	675	106	26
23	26	28	93	353	1,162	434	218	26
24	57	28	97	392	492	328	151	26
25	54	26	97	492	379	420	124	26
26	33	24	89	477	448	706	106	26
27	28	26	73	270	553	899	106	26
28	26	24	116	228	537	568	97	18
29	93	.....	144	218	706	492	88	18
30	421	.....	156	249	833	379	88	18
31	257	.....	163	.....	448	.....	79	18

NOTE.—Daily discharge May 17, 1910, interpolated by engineers of the United States Geological Survey.

Monthly discharge of Rubicon River at Rubicon Springs, Cal., for 1910–11.

[Drainage area, 31.6 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1910.						
February	88	62	68.3	2.16	2.25	3,790
March	353	43	157	4.97	5.73	9,650
April	434	115	258	8.17	9.12	15,400
May	675	124	388	12.3	14.18	23,900
June	492	70	138	4.37	4.88	8,210
July	79	12	44.7	1.41	1.63	2,750
August	12	1	3.5	.111	.13	215
September	115	0	13.1	.415	.46	780
October	1	1	1.0	.032	.04	61
November	507	1	44.8	1.42	1.58	2,670
December	537	12	78.7	2.49	2.87	4,840
The period						72,300
1911.						
January	421	6	47.3	1.50	1.73	2,910
February	135	24	43.9	1.39	1.45	2,440
March	163	24	65.0	2.06	2.38	4,000
April	492	61	210	6.65	7.42	12,500
May	1,160	170	446	14.1	16.26	27,400
June	1,240	328	861	27.2	30.35	51,200
July	463	79	280	8.86	10.22	17,200
August	70	18	41.2	1.30	1.50	2,530
The period						120,000

RUBICON RIVER NEAR QUINTETTE, CAL.

Location.—In the NW. ¼ SW. ¼ sec. 24, T. 13 N., R. 13 E., about 1 mile below mouth of Little South Fork of Rubicon River, half a mile above the trail crossing to Ellicott, and 11½ miles northeast of Quintette.

Records available.—November 21, 1909, to August 31, 1911.

Drainage area.—198 square miles.

Channel.—In solid rock.

Discharge measurements.—Made from car and cable.

Accuracy.—Results excellent.

Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

Daily discharge, in second-feet, of Rubicon River near Quintette, Cal., for 1909–1911.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1909.			1909.			1909.		
1		6,660	11		844	21	7,560	358
2		2,570	12		758	22	6,270	388
3		1,350	13		715	23	4,000	328
4		934	14		674	24	2,200	274
5		844	15		593	25	1,385	250
6		758	16		554	26	888	274
7		715	17		484	27	758	274
8		844	18		452	28	934	274
9		2,312	19		420	29	934	274
10		1,132	20		388	30	1,200	328
						31		3,000

Daily discharge, in second-feet, of Rubicon River near Quintette, Cal., for 1909–1911—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	1,250	452	888	1,190	1,385	1,132	168	40	7	12	12	148
2	888	420	980	1,460	1,250	1,028	150	40	7	12	9	148
3	674	452	1,028	1,190	1,500	888	150	31	7	12	9	2,900
4	593	420	1,250	1,132	1,190	758	133	31	7	12	9	735
5	554	388	1,078	1,250	980	715	133	31	7	12	9	414
6	554	420	1,028	1,250	1,078	633	116	23	7	12	9	297
7	518	420	934	1,315	1,315	593	116	23	7	12	9	778
8	484	388	934	1,580	1,839	554	116	23	7	12	9	489
9	484	388	1,078	1,840	2,140	518	133	23	7	12	15	569
10	452	388	1,132	2,010	2,312	554	133	23	7	10	54	735
11	420	388	1,190	2,010	1,753	518	116	19	7	20	54	1,690
12	358	420	1,315	1,385	1,668	484	116	19	5	25	297	735
13	388	452	1,250	1,580	1,753	484	100	16	5	30	166	489
14	388	518	1,385	1,670	1,753	420	89	16	5	20	113	324
15	388	420	1,132	1,580	1,582	358	100	16	11	15	113	297
16	420	420	980	1,750	1,582	420	89	13	49	15	97	272
17	388	452	1,078	2,010	1,190	388	89	13	150	68	68	248
18	388	420	1,190	2,398	1,190	388	78	13	68	68	68	225
19	388	388	1,385	2,226	1,250	388	89	11	49	54	82	225
20	358	388	1,750	2,226	1,190	358	187	11	40	34	82	204
21	358	388	2,100	2,097	1,250	300	116	11	31	27	82	185
22	484	452	1,580	2,183	1,315	250	89	11	23	20	82	166
23	934	452	1,315	2,312	1,250	250	78	11	23	20	910	148
24	980	420	1,078	2,484	1,385	228	78	9	19	15	450	130
25	758	554	934	2,398	1,315	250	68	9	16	15	414	130
26	633	452	888	2,312	1,190	274	58	9	16	12	248	130
27	554	452	800	2,183	1,190	274	58	9	13	12	204	113
28	554	420	758	3,000	1,132	274	58	9	13	12	148	113
29	554	.....	758	2,010	1,078	207	49	7	13	12	148	113
30	518	.....	888	2,312	1,132	187	49	7	11	12	148	113
31	518	.....	934	.....	1,190	.....	49	7	.....	12	.....	113

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911.								
1	97	1,828	352	2,624	1,901	2,714	1,320	248
2	97	1,438	324	2,537	1,768	3,831	1,320	225
3	82	1,102	352	2,452	2,286	4,060	1,378	225
4	82	956	569	1,901	2,806	4,420	1,320	204
5	82	821	529	2,537	2,996	4,298	1,320	204
6	82	735	489	2,368	1,901	3,504	1,378	185
7	82	651	610	1,975	1,768	3,944	1,208	166
8	82	569	569	1,901	1,975	3,296	1,052	166
9	130	569	489	1,901	1,901	3,831	910	166
10	185	569	610	1,498	1,901	4,673	956	148
11	204	569	569	1,263	2,127	4,545	956	148
12	225	489	529	1,154	2,286	4,298	910	130
13	248	489	529	1,003	2,286	4,420	910	130
14	272	382	529	956	2,050	4,060	865	130
15	272	414	569	956	1,901	3,504	865	113
16	225	382	610	1,102	1,828	4,178	865	113
17	225	450	651	1,320	1,498	3,831	821	113
18	225	414	735	1,768	1,561	3,504	735	113
19	382	414	821	1,768	1,690	3,720	693	113
20	778	414	910	1,498	2,205	3,296	569	97
21	569	382	1,003	1,690	2,900	2,900	450	82
22	414	382	1,052	2,050	3,504	2,286	414	82
23	352	382	1,263	2,537	4,673	1,768	382	82
24	778	382	1,320	2,900	2,996	1,438	414	82
25	735	352	1,320	3,094	2,205	1,378	382	82
26	450	324	1,208	2,806	2,127	2,050	352	82
27	382	352	1,320	2,127	2,368	2,368	324	68
28	352	324	1,378	1,561	2,624	1,901	324	68
29	1,263	.....	1,768	1,498	2,452	1,561	297	68
30	5,766	.....	2,127	1,768	3,296	1,378	297	54
31	3,504	.....	2,205	.....	2,537	.....	272	54

NOTE.—Daily discharge Nov. 23, 24, and 30, 1909, estimated by engineers of the United States Geological Survey from records of discharge at adjacent stations.

Monthly discharge of Rubicon River near Quintette, Cal., for 1909–1911.

[Discharge area, 198 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1909.						
November 21–30	7,560	758	2,610	13.2	4.91	51,800
December	6,660	250	968	4.89	5.64	59,500
1910.						
January	1,250	358	554	2.80	3.23	34,100
February	554	388	428	2.16	2.25	23,800
March	2,100	758	1,130	5.71	6.58	69,500
April	3,000	1,130	1,880	9.49	10.60	112,000
May	2,310	980	1,400	7.07	8.15	86,100
June	1,130	187	469	2.37	2.64	27,900
July	187	49	102	.515	.59	6,270
August	40	7	17.2	.087	.10	1,060
September	150	5	21.2	.107	.12	1,260
October	68	10	20.5	.104	.12	1,260
November	910	9	137	.692	.77	8,150
December	2,900	113	431	2.18	2.51	26,500
The year	3,000	5	549	2.77	37.66	398,000
1911.						
January	5,770	82	601	3.04	3.50	37,000
February	1,830	324	591	2.98	3.10	32,800
March	2,200	324	881	4.45	5.13	54,200
April	3,090	956	1,880	9.49	10.59	112,000
May	4,670	1,500	2,330	11.8	13.60	143,000
June	4,670	1,380	3,230	16.3	18.19	192,000
July	1,380	272	783	3.95	4.55	48,100
August	248	54	127	.641	.74	7,810
The period						627,000

LITTLE RUBICON RIVER NEAR RUBICON SPRINGS, CAL.

Location.—At trail crossing one-fourth mile below Buck Island Lake and about 1 mile southwest of Rubicon Springs, in the NW. ¼ NW. ¼ sec. 6, T. 13 N., R. 16 E.

Records available.—November 1, 1910, to August 31, 1911.

Drainage area.—7 square miles.

Gage.—Staff, read every other day.

Channel.—Solid granite.

Discharge measurements.—Made from footbridge.

Winter flow.—Affected by ice.

Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

Daily discharge, in second-feet, of Little Rubicon River near Rubicon Springs, Cal., for 1910–1911.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1	0	8	11	0	143	21	8	8
2	0	104	12	5	85	22	8	8
3	0	200	13	13	28	23	38	8
4	0	119	14	13	24	24	50	8
5	0	38	15	13	20	25	50	8
6	0	44	16	8	16	26	28	6
7	0	50	17	8	13	27	13	5
8	0	65	18	8	13	28	13	5
9	0	80	19	8	13	29	13	5
10	0	111	20	8	10	30	13	5
						31		5

Daily discharge, in second-feet, of Little Rubicon River near Rubicon Springs, Cal., for 1910–1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug
1911.								
1	6	120	13	72	64	115	80	5
2	6	75	13	80	64	159	80	5
3	6	57	16	64	91	200	80	5
4	6	41	22	50	119	257	80	5
5	5	33	16	57	99	314	80	5
6	4	16	16	64	80	314	65	5
7	5	33	16	50	72	314	50	5
8	6	29	16	38	64	293	57	6
9	7	22	16	38	64	272	64	5
10	8	22	22	38	64	293	64	5
11	11	22	22	28	81	314	64	5
12	11	22	16	20	98	293	50	5
13	14	22	16	20	89	272	38	5
14	12	22	16	20	80	253	78	5
15	9	22	16	20	80	234	119	5
16	9	22	16	20	80	253	99	5
17	9	21	22	28	59	272	80	5
18	9	16	29	38	38	253	57	5
19	31	16	29	28	59	234	38	5
20	24	16	29	50	80	176	38	5
21	20	16	23	50	140	119	38	3
22	18	16	27	50	200	108	28	2
23	31	21	22	74	185	98	20	2
24	27	16	27	98	170	98	12	2
25	24	13	30	108	125	98	5	2
26	16	16	22	119	80	134	3	2
27	14	13	14	84	99	170	1	2
28	36	13	19	50	119	134	1	2
29	36	.....	22	57	131	98	2	2
30	104	.....	33	64	143	89	3	2
31	155	.....	44	.....	131	.....	5	2

Monthly discharge of Little Rubicon River near Rubicon Springs, Cal., for 1910–11.

[Drainage area, 7 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1910.						
November	50	0	10.2	1.46	1.63	607
December	200	5	40.5	5.79	6.68	2,490
1911.						
January	155	4	21.9	3.13	3.61	1,350
February	120	13	27.6	3.94	4.10	1,530
March	44	13	21.3	3.04	3.50	1,310
April	119	20	52.6	7.51	8.38	3,130
May	200	38	98.3	14.0	16.14	6,040
June	314	89	208	29.7	33.14	12,400
July	119	1	47.7	6.81	7.85	2,930
August	5	2	4.0	.571	0.66	246
The period	.....	.....	.....	.....	.....	28,900

LITTLE SOUTH FORK OF RUBICON RIVER AT SAWMILL NEAR QUINTETTE, CAL.

Location.—In the NW. ¼ NW. ¼ sec. 24, T. 13 N., R. 14 E., at South Fork sawmill, about half a mile above the mouth of Gerle Creek and 15 miles northeast of Quintette.

Records available.—February 1, 1010, to August 31, 1911.

Drainage area.—16.6 square miles.

Gage.—Staff.

Channel.—Compact gravel.

Discharge measurements.—Made from car and cable.

Winter flow.—Affected by ice.

Accuracy.—Results excellent except for winter months.

Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

Daily discharge, in second-feet, of Little South Fork of Rubicon River at sawmill near Quintette, Cal., for 1910–11.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.											
1	74	74	106	106	49	7	0	0.0	0.3	0.5	5
2	161	74	117	117	42	2	0	.0	.3	.5	5
3	150	84	117	117	35	2	0	.0	.3	.5	185
4	95	95	106	95	35	2	0	.0	.3	.5	28
5	65	95	117	84	35	2	0	.0	.3	.5	21
6	57	84	128	95	30	2	0	.0	.3	.5	15
7	49	84	128	161	42	2	0	.0	.3	.5	28
8	42	84	128	161	25	2	0	.0	.3	2	28
9	42	106	172	150	16	2	0	.0	.3	5	48
10	42	106	161	172	20	2	0	.0	.3	2	61
11	35	117	150	128	16	.7	0	.0	2	5	110
12	42	117	139	139	16	.7	0	.0	4	9	37
13	42	106	150	117	16	.7	0	.0	2	9	28
14	42	106	150	139	16	.7	0	.3	2	5	21
15	74	95	183	128	13	.7	0	.3	1	5	15
16	42	95	161	106	16	.7	0	4	1	5	15
17	49	106	183	84	13	.7	0	2	6	5	15
18	35	128	205	95	13	.7	0	2	6	5	9
19	35	328	205	95	10	.7	0	.3	6	5	9
20	35	183	194	84	10	13	0	.3	6	5	9
21	30	139	161	74	10	.7	0	.3	6	5	9
22	35	117	172	74	7	.7	0	.3	3	5	9
23	35	95	183	74	7	.7	0	.3	3	48	9
24	35	84	172	74	7	.7	0	.3	1	21	9
25	49	84	183	74	7	.3	0	.3	1	15	9
26	42	65	205	65	10	.3	0	.3	1	9	9
27	49	42	227	57	10	.3	0	.3	1	9	15
28	65	106	239	49	10	.3	0	.3	.0	9	15
29	.....	65	161	57	7	.3	0	.3	.0	9	9
30	.....	84	128	65	7	.3	0	.3	.0	5	9
31	.....	106	.....	49	.....	.0	0	.....	.0	.....	9

Daily discharge, in second-feet, of Little South Fork of Rubicon River at sawmill near Quintette, Cal., for 1910–11—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911.								
1	15	309	28	225	185	330	61	5
2	15	166	28	225	185	351	61	5
3	15	128	37	205	309	395	61	5
4	9	92	48	147	395	417	48	5
5	9	76	37	225	246	395	48	5
6	9	37	37	225	205	351	48	5
7	9	76	37	185	185	351	61	5
8	9	61	37	166	225	330	48	5
9	21	48	37	166	205	351	48	5
10	25	48	48	128	246	463	48	5
11	25	48	48	92	288	440	48	5
12	37	48	37	92	288	351	28	5
13	33	48	37	76	246	417	48	5
14	29	48	37	76	225	330	28	5
15	21	48	37	92	205	309	28	2
16	21	48	37	110	166	309	28	2
17	21	48	48	147	147	309	28	2
18	25	37	61	185	166	288	21	2
19	71	37	61	166	225	288	21	2
20	53	37	61	147	288	246	21	2
21	45	37	76	185	395	185	9	2
22	41	37	76	246	440	147	9	2
23	71	48	92	288	509	128	9	2
24	62	37	92	309	246	110	9	2
25	53	28	92	330	205	110	9	2
26	37	37	92	267	225	147	9	2
27	33	25	92	185	267	147	9	2
28	80	28	128	147	246	92	9	2
29	80	.....	147	147	267	76	5	2
30	492	.....	166	185	509	61	5	2
31	345	.....	185	.....	267	.....	5	2

Monthly discharge of Little South Fork of Rubicon River at sawmill near Quintette, Cal., for 1910–11.

[Drainage area, 16.6 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1910.						
February	161	30	55.3	3.33	3.47	3,070
March	328	42	105	6.33	7.30	6,460
April	239	106	161	9.70	10.82	9,580
May	172	49	99.5	5.99	6.91	6,120
June	49	7	18.3	1.10	1.23	1,090
July	13	.0	1.58	.095	.11	97.2
August	.0	.0	.00	.000	.00	.0
September	4	.0	.41	.025	.03	24.4
October	6	.0	1.77	.107	.12	109
November	48	.5	6.85	.413	.46	408
December	185	5	25.9	1.56	1.80	1,590
The period	.....	.....	.....	.....	.....	28,500
1911.						
January	492	9	58.4	3.52	4.06	3,590
February	309	25	63.0	3.80	3.96	3,500
March	185	28	67.0	4.04	4.66	4,120
April	330	76	179	10.8	12.05	10,700
May	509	147	265	16.0	18.45	16,300
June	463	61	274	16.5	18.41	16,300
July	61	5	29.6	1.78	2.05	1,820
August	5	2	3.4	.205	.24	209
The period	.....	.....	.....	.....	.....	56,500

LITTLE SOUTH FORK OF RUBICON RIVER BELOW GERLE CREEK, NEAR QUINTETTE, CAL.

Location.—In the SE. ¼ SE. ¼ sec. 21, T. 13 N., R. 14 E., one-fourth mile below Gerle Creek, 1 mile below South Fork sawmill, and 15 miles northeast of Quintette.

Records available.—February 1, 1910, to August 31, 1911.

Drainage area.—49.6 square miles.

Gage.—Staff.

Channel.—Gravel and bowlders, practically permanent.

Discharge measurements.—Made from car and cable.

Diversions.—Water is diverted from Gerle Creek about 1¾ miles above the mouth and discharges into Pilot Creek above Uncle Tom's Cabin.

Winter flow.—Affected by ice.

Accuracy.—Results excellent except for winter months.

Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

Daily discharge, in second-feet, of Little South Fork of Rubicon River below Gerle Creek near Quintette, Cal., for 1910–11.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.											
1	195	257	303	375	92	10	5	5	5	2	20
2	125	280	327	375	92	5	3	5	5	2	20
3	215	303	327	375	83	5	3	5	5	2	487
4	125	327	303	327	83	5	5	5	5	2	132
5	112	327	327	280	83	5	5	5	5	2	94
6	112	303	351	303	55	5	5	5	5	2	65
7	112	303	327	424	50	5	5	5	5	2	119
8	112	303	375	424	33	5	5	5	5	5	106
9	102	351	472	424	23	5	5	5	5	7	132
10	102	351	448	472	27	5	5	5	5	5	177
11	102	375	448	351	23	5	5	5	7	10	320
12	102	375	375	351	23	5	5	5	7	24	161
13	112	375	424	327	18	5	5	5	7	16	132
14	112	375	424	327	23	5	5	7	5	13	106
15	125	327	424	303	18	5	5	7	7	10	84
16	125	327	424	235	18	5	5	13	5	10	74
17	112	351	472	215	18	5	5	10	49	10	65
18	102	424	568	215	14	5	5	10	43	10	57
19	92	880	568	195	14	5	5	13	32	13	49
20	92	568	544	175	14	5	5	5	20	10	49
21	69	496	472	175	10	5	5	5	16	10	43
22	83	424	472	175	10	5	5	5	10	10	37
23	75	351	520	155	10	5	5	5	7	49	37
24	102	327	496	155	10	5	5	5	5	32	37
25	112	303	544	155	10	5	5	5	5	37	32
26	102	257	592	125	10	5	5	5	3	28	32
27	112	175	616	125	10	5	5	5	3	24	32
28	215	351	640	112	10	5	5	5	3	28	32
29	.....	257	520	112	10	5	5	5	3	28	24
30	.....	215	472	112	18	5	5	5	2	20	24
31	.....	280	.....	102	.....	5	5	.....	2	.....	28

Daily discharge, in second-feet, of Little South Fork of Rubicon River below Gerle Creek, near Quintette, Cal., for 1910–11—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911.								
1	32	589	94	702	520	923	146	10
2	28	425	94	702	487	1,028	146	10
3	24	371	106	663	785	1,078	132	10
4	20	320	161	520	923	1,025	132	10
5	20	296	146	625	663	1,025	119	10
6	20	251	132	663	520	875	106	10
7	20	231	119	589	487	973	106	10
8	20	231	94	554	625	923	94	10
9	57	212	106	554	589	923	84	10
10	43	194	146	425	663	1,132	74	10
11	37	177	132	371	785	1,025	74	10
12	37	177	132	320	785	923	49	9
13	70	146	132	296	702	923	65	9
14	70	132	119	296	663	829	49	9
15	65	161	132	320	625	743	49	9
16	48	177	146	371	554	743	43	9
17	47	132	177	455	487	743	37	9
18	48	119	194	554	554	702	37	9
19	59	119	212	554	702	702	32	9
20	170	119	231	487	875	589	28	9
21	146	119	251	554	1,078	487	16	9
22	123	106	273	663	1,132	425	16	9
23	111	119	320	829	1,300	273	16	9
24	155	106	320	875	829	212	16	7
25	133	106	345	829	702	212	16	7
26	100	132	320	702	743	251	12	7
27	88	106	345	487	829	251	13	7
28	78	94	398	371	829	194	12	7
29	219	.....	487	398	785	177	10	7
30	1,360	.....	554	487	1,300	146	12	7
31	785	.....	589	.....	785	.....	13	7

Monthly discharge of Little South Fork of Rubicon River below Gerle Creek, near Quintette, Cal., for 1910–11.

[Drainage area, 49.6 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1910.						
February	215	69	116	2.34	2.44	6,440
March	880	175	352	7.10	8.19	21,600
April	640	303	452	9.11	10.16	26,900
May	472	102	257	5.18	5.97	15,800
June	92	10	30.4	.613	.68	1,810
July	10	5	5.2	.105	.12	320
August	5	3	4.9	.099	.11	301
September	13	5	6.0	.121.	.14	357
October	49	2	9.4	.190	.22	578
November	49	2	14.1	.284	.32	839
December	487	20	90.5	1.82	2.10	5,560
The period	.....	.....	.....	.....	.....	80,500
1911.						
January	1,360	20	137	2.76	3.18	8,420
February	589	94	195	3.93	4.09	10,800
March	589	94	226	4.56	5.26	13,900
April	875	296	541	10.9	12.16	32,200
May	1,300	487	752	15.2	17.52	46,200
June	1,130	146	682	13.8	15.40	40,600
July	146	10	56.6	1.14	1.31	3,480
August	10	7	8.8	.177	.20	541
The period	.....	.....	.....	.....	.....	156,000

LITTLE SOUTH FORK OF RUBICON RIVER AT MOUTH, NEAR QUINTETTE, CAL.

Location.—In the SE. ¼ sec. 13, T. 13 N., R. 13 E., about one-fourth mile above the mouth of the river and 13 miles northeast of Quintette.

Records available.—November 29, 1909, to June 30, 1911.

Drainage area.—57.8 square miles.

Gage.—Staff.

Channel.—Composed of bowlders, rough, and somewhat shifting.

Discharge measurements.—Made from car and cable.

Accuracy.—Results good.

Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

Daily discharge, in second-feet, of Little South Fork of Rubicon River at mouth, near Quintette, Cal., for 1909–1911.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1909.			1909.			1909.		
1		760	11		450	21		149
2		501	12		380	22		136
3		340	13		340	23		111
4		278	14		332	24		94
5		234	15		316	25		82
6		196	16		219	26		77
7		183	17		196	27		82
8		211	18		183	28		88
9		595	19		169	29	211	88
10		527	20		155	30	255	94
						31		509

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.												
1	415	196	309	405	433	155	12	5	5	6	3	16
2	316	183	324	423	397	142	12	3	5	6	3	16
3	248	183	354	380	405	118	8	3	6	6	3	562
4	225	175	380	389	362	111	8	3	6	6	2	214
5	204	169	371	405	347	88	8	5	6	6	2	113
6	196	169	354	423	332	77	8	5	7	6	2	99
7	190	175	347	441	362	66	8	5	7	6	2	199
8	183	162	347	458	405	61	8	5	7	6	2	141
9	183	162	380	492	423	61	5	5	8	6	9	155
10	175	162	380	527	433	56	5	5	8	8	9	155
11	169	155	405	492	397	51	5	5	8	8	11	562
12	149	149	415	467	362	47	5	5	8	8	39	214
13	149	149	433	458	354	47	5	5	8	8	24	169
14	142	155	450	450	332	42	5	5	8	6	14	141
15	150	136	397	433	316	37	5	5	10	8	14	113
16	150	136	354	458	292	37	5	5	16	6	11	99
17	150	142	397	475	255	42	5	5	11	49	11	99
18	150	142	423	492	255	37	5	3	10	60	11	86
19	150	136	458	475	248	33	5	3	9	39	11	86
20	150	136	501	484	234	28	5	3	8	31	11	73
21	150	142	552	467	225	24	5	3	7	18	11	61
22	183	142	492	475	225	16	5	3	6	14	11	50
23	278	149	450	525	219	16	5	3	6	11	14	40
24	285	142	397	501	204	16	5	3	6	9	49	40
25	255	162	354	535	190	16	5	3	6	7	60	40
26	248	149	324	578	183	12	5	3	6	6	31	40
27	225	142	285	595	183	12	5	3	6	6	31	31
28	219	225	240	616	175	16	5	3	6	6	24	31
29	211	.....	248	501	169	12	5	3	6	4	18	31
30	211	.....	300	467	169	12	5	3	6	4	14	23
31	211	.....	362	.....	162	.....	.....	3	.....	3	.....	23

Daily discharge, in second-feet, of Little South Fork of Rubicon River at mouth, near Quintette, Cal., for 1909–1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1911.							1911.						
1	16	811	127	848	675	943	16	73	141	199	463	705	798
2	16	620	127	890	616	1,050	17	73	155	230	536	616	705
3	23	511	141	848	830	1,170	18	73	155	246	650	675	705
4	23	439	199	712	992	1,230	19	86	155	278	681	766	735
5	23	370	184	848	901	1,170	20	246	155	312	590	864	645
6	23	330	169	890	675	992	21	184	141	349	681	1,110	561
7	23	295	169	777	588	1,050	22	155	141	370	777	1,170	485
8	23	262	169	712	735	992	23	141	141	416	937	1,410	312
9	23	246	155	744	705	1,110	24	246	141	439	1,110	901	258
10	73	246	214	562	766	1,170	25	214	127	439	1,110	830	242
11	86	230	199	511	798	1,110	26	184	113	439	890	798	258
12	86	199	184	463	830	992	27	127	127	439	650	864	275
13	127	199	169	416	830	901	28	113	141	487	511	943	214
14	113	184	169	416	798	830	29	278	.....	590	511	830	199
15	99	155	184	416	766	798	30	1,710	.....	712	620	1,170	184
							31	1,230	.....	744	.....	901	.....

NOTE.—Daily discharge Jan. 15 to 21 and Apr. 23, 1910, estimated by engineers of United States Geological Survey from record of discharge of Little South Fork of Rubicon River below Gerle Creek near Quintette.

Monthly discharge of Little South Fork of Rubicon River at mouth, near Quintette, Cal., for 1909–1911.

[Drainage area, 57.8 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1909.						
December	760	77	260	4.50	5.19	16,000
1910.						
January	415	142	204	3.53	4.07	12,500
February	225	136	158	2.73	2.84	8,780
March	552	240	380	6.57	7.57	23,400
April	616	380	476	8.24	9.19	28,300
May	433	162	292	5.05	5.82	18,000
June	155	12	49.6	.858	.96	2,950
July	12	5	5.9	.102	.12	363
August	5	3	3.9	.067	.08	240
September	16	5	7.4	.128	.14	440
October	60	3	12.0	.208	.24	738
November	60	2	15.2	.263	.29	904
December	562	16	120	2.08	2.40	7,380
The year	616	2	144	2.49	33.72	104,000
1911.						
January	1,710	16	191	3.30	3.80	11,700
February	811	113	248	4.29	4.47	13,800
March	744	127	298	5.16	5.95	18,300
April	1,110	416	692	12.0	13.39	41,200
May	1,410	588	841	14.6	16.83	51,700
June	1,230	184	736	12.7	14.17	43,800
The period	.....	.....	.....	.....	.....	180,000

GERLE CREEK NEAR RUBICON SPRINGS, CAL.

Location.—At the outlet of Loon Lake, in the SE. ¼ NE. ¼ sec. 5, T. 13 N., R. 15 E., 3¾ miles southwest of Rubicon Springs.
Records available.—July 12, 1910, to August 31, 1911.
Drainage area.—9 square miles.
Gage.—Staff.
Channel.—Solid granite.
Discharge measurements.—Made from car and cable.
Winter flow.—Affected by ice.
Accuracy.—Results excellent except for winter.
Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

Daily discharge, in second-feet, of Gerle Creek near Rubicon Springs, Cal., for 1910–11.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.							1910.						
1		14	20	15	3	18	16	12	18	18	41	3	31
2		14	20	15	2	21	17	12	18	18	60	3	27
3		17	20	15	1	24	18	13	17	18	52	3	23
4		19	20	15	3	27	19	14	17	18	44	4	20
5		19	20	15	3	31	20	14	17	17	36	5	18
6		19	20	15	4	34	21	14	17	17	28	5	16
7		19	19	17	4	37	22	14	17	17	20	6	14
8		19	19	17	4	40	23	14	17	17	17	7	12
9		19	19	16	4	43	24	14	17	17	16	8	11
10		19	19	16	5	48	25	14	17	17	14	8	9
11		18	19	16	5	52	26	14	17	16	12	7	8
12	7	18	19	15	5	56	27	14	17	16	10	6	7
13	8	18	18	15	4	59	28	14	18	16	8	9	7
14	10	18	18	15	4	42	29	14	20	16	6	12	6
15	12	18	18	15	4	35	30	14	20	16	5	15	6
							31	14	20	.....	4	.....	5

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911.								
1	5	92	15	92	3	147	5	16
2	4	88	15	92	3	147	5	16
3	4	69	20	92	3	147	5	16
4	4	50	27	92	3	147	5	16
5	4	41	20	93	3	147	5	16
6	4	20	20	94	3	147	5	16
7	4	41	20	95	3	147	5	17
8	4	35	20	96	27	147	6	18
9	5	27	20	97	48	147	6	18
10	7	27	27	98	53	147	6	18
11	6	27	27	95	56	147	6	18
12	8	27	20	92	59	147	6	18
13	10	27	20	89	66	147	6	22
14	12	27	20	86	97	147	5	24
15	11	27	20	83	115	147	5	24
16	11	27	20	80	119	147	4	24
17	11	27	27	77	122	147	4	24
18	11	20	33	74	126	147	4	24
19	26	20	35	76	126	147	4	24
20	29	20	37	78	126	137	4	24
21	24	20	39	80	130	126	4	24
22	42	20	40	84	135	82	4	24
23	38	27	43	89	137	22	4	24
24	33	20	45	93	149	6	4	24
25	29	15	49	38	151	6	4	24
26	20	20	49	3	147	5	4	24
27	17	15	49	3	147	5	4	24
28	40	15	69	3	147	5	4	24
29	40	.....	76	3	147	5	11.5	24
30	40	.....	84	3	147	5	16	24
31	56	.....	92	.....	147	.....	16	24

Monthly discharge of Gerle Creek near Rubicon Springs, Cal., for 1910–11.

[Drainage area, 9 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1910.						
July 12–31	14	7	12.8	1.42	1.06	508
August	20	14	17.8	1.98	2.28	1,090
September	20	16	18.1	2.01	2.24	1,080
October	60	4	19.5	2.17	2.50	1,200
November	15	1	5.2	.578	.64	309
December	59	5	25.4	2.82	3.25	1,560
1911.						
January	56	4	18.0	2.00	2.31	1,110
February	92	15	31.8	3.53	3.68	1,770
March	92	15	35.4	3.93	4.53	2,180
April	98	3	72.3	8.03	8.96	4,300
May	151	3	88.5	9.83	11.33	5,440
June	147	5	107	11.9	13.28	6,370
July	16	4	5.69	.632	.73	350
August	24	16	21.2	2.36	2.72	1,300
The period						22,800

LITTLE SOUTH FORK DITCH AT SAWMILL NEAR QUINTETTE, CAL.

Location.—At flume across Little South Fork of Rubicon River about half a mile above sawmill and 15 miles northeast of Quintette.

Records available.—June 7, 1910, to July 31, 1911.

Gage.—

Discharge measurements.—

Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

The intake of this canal is on Gerle Creek about 1¾ miles above the mouth; the course of the ditch is south until it crosses the Little Rubicon. It then flows down the valley to a point in the main Rubicon canyon, where it is carried by a tunnel into the Pilot Creek drainage area, a total distance of about 10 miles.

Daily discharge, in second-feet, of Little South Fork ditch at sawmill near Quintette, Cal., for 1910–11.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Day.	June.	July.	Aug.	Sept.	Oct.	Nov.
1910.							1910.						
1	.....	6	8	13.4	12	1.7	16	16	8	12	13.4	9.9	.....
2	.....	8	8	13.4	12	1.7	17	16	8	12	12.0	15.2	.....
3	.....	8	8	13.4	12	.7	18	14	8	12	9.9	15.2	.....
4	.....	8	12	13.4	12	.3	19	14	10	12	13.4	15.2	.....
5	.....	6	12	13.4	12	.7	20	14	10	12	13.4	15.2	.....
6	.....	6	12	13.4	9.9	.7	21	14	10	12	12	15.2	.....
7	8	6	12	13.4	9.9	.7	22	12	10	12	12	13.4	.....
8	14	6	12	13.4	9.9	.7	23	12	10	12	12	12	.....
9	18	6	12	13.4	9.9	.....	24	10	10	12	12	12	.....
10	18	6	12	13.4	9.9	.....	25	10	8	12	12	9.9	.....
11	18	4	12	13.4	12	.....	26	10	8	12	12	8.2	.....
12	18	4	12	13.4	12	.....	27	8	8	12	12	4.9	.....
13	16	4	12	13.4	9.9	.....	28	8	8	12	12	3.9	.....
14	18	4	12	13.4	9.9	.....	29	8	8	14	12	2.5	.....
15	16	8	12	13.4	9.9	.....	30	8	8	14	12	2.5	.....
							31	.....	8	14	.....	2.5	.....

Daily discharge, in second-feet, of Little South Fork ditch at sawmill near Quintette, Cal., for 1910–11—Continued.

Day.	July.	Aug.	Day.	July.	Aug.	Day.	July.	Aug.
1911.			1911.			1911.		
1		14.0	11	12.2	12.2	21	14	14
2		12.2	12	12.2	12.2	22	14	14
3		12.2	13	14.0	10.5	23	12.2	14
4		12.2	14	12.2	14	24	12.2	14
5		10.5	15	12.2	14	25	12.2	14
6		10.5	16	12.2	14	26	10.5	14
7	12.2	10.5	17	10.5	14	27	10.5	14
8	12.2	10.5	18	8.7	14	28	8.7	12.2
9	12.2	10.5	19	8.7	14	29	8.7	12.2
10	12.2	12.2	20	7	14	30	15.7	12.2
						31	15.7	12.2

NOTE.—Discharge July 6, 1910, interpolated by engineers of United States Geological Survey. Ditch dry Nov. 9, 1910, to July 6, 1911.

Monthly discharge of Little South Fork ditch at sawmill near Quintette, Cal., for 1910–11.

Month.	Discharge in second-feet.			Run-off (in acre-feet).
	Maximum.	Minimum.	Mean.	
1910.				
June 7–30	18	8	13.2	628
July	10	4	7.4	455
August	14	8	11.8	726
September	13.4	12	12.8	762
October	15.2	2.5	10.4	640
November	1.7	.0	.24	14
December	.0	.0	.00	0
The period				3,220
1911.				
January	0.0	0.0	0.0	0
February	.0	.0	.0	0
March	.0	.0	.0	0
April	.0	.0	.0	0
May	.0	.0	.0	0
June	.0	.0	.0	0
July	15.7	.0	9.5	584
August	14.0	10.5	12.7	781
The period				1,360

PILOT CREEK NEAR QUINTETTE, CAL.

Location.—At Bacchi road crossing, in the NW. ¼ NW. ¼ sec. 10, T. 12 N., R. 12 E., about three-fourths of a mile southwest of Bacchi and 4 miles east of Quintette.

Records available.—February 24, 1910, to August 31, 1911.

Drainage area.—18.7 square miles; the natural run-off from the basin is increased by water diverted from Gerle Creek.

Gage.—Staff.

Channel.—Compact gravel.

Discharge measurements.—Made from car and cable.

Diversions.—Pilot Creek ditch.

Accuracy.—Results excellent.

Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

Daily discharge, in second-feet, of Pilot Creek near Quintette, Cal., for 1910–11.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.											
1	.....	76	116	47	15	7	7	6	6	4	4
2	.....	76	132	47	15	7	7	4	6	4	4
3	.....	88	132	41	11	7	7	4	6	4	36
4	.....	101	150	47	11	7	7	4	6	4	28
5	.....	116	150	41	11	7	7	4	6	4	12
6	.....	116	150	41	11	7	7	4	6	4	8
7	.....	116	150	41	11	7	7	4	6	4	12
8	.....	116	132	35	11	7	7	4	6	4	8
9	.....	132	132	35	11	7	7	4	6	4	8
10	.....	132	132	35	11	7	7	4	6	4	8
11	.....	132	150	35	11	7	7	4	8	6	36
12	.....	132	132	35	11	7	7	4	12	8	16
13	.....	150	116	30	7	7	7	6	12	4	12
14	.....	150	116	30	7	7	7	6	8	4	8
15	.....	150	101	30	7	7	7	8	8	4	8
16	.....	132	101	30	7	7	7	36	8	4	6
17	.....	132	101	25	7	7	7	16	8	4	6
18	.....	170	101	25	7	7	7	12	12	6	6
19	.....	261	101	25	7	7	7	12	12	4	6
20	.....	343	88	25	7	7	7	12	12	4	6
21	.....	300	88	25	7	7	7	12	12	4	6
22	.....	278	76	25	7	7	7	12	12	4	6
23	.....	261	76	20	7	7	7	12	12	4	4
24	35	212	76	20	7	7	7	8	8	4	4
25	76	191	66	20	7	7	7	8	8	16	4
26	66	170	55	20	7	7	7	8	6	6	4
27	66	150	47	20	7	7	7	6	6	6	4
28	66	132	66	20	7	7	7	6	4	6	4
29	.....	116	55	20	7	7	7	6	4	4	4
30	.....	116	55	20	7	7	7	6	4	4	4
31	.....	101	.....	15	.....	7	7	.....	4	.....	4

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911.								
1	4	370	44	244	144	84	22	6
2	6	268	44	268	144	84	22	6
3	6	220	44	268	144	84	22	6
4	8	200	72	244	144	72	22	6
5	4	160	72	584	180	72	12	6
6	4	144	84	506	160	72	12	6
7	4	112	112	402	144	72	12	6
8	4	112	160	316	144	72	12	6
9	8	96	144	316	128	62	12	6
10	22	84	144	292	128	62	12	6
11	12	84	128	268	128	44	12	6
12	62	72	128	220	128	44	12	6
13	96	72	112	200	128	44	12	6
14	200	72	112	180	112	44	12	6
15	72	62	112	180	112	36	8	6
16	84	52	112	160	112	36	8	6
17	72	52	112	160	96	36	8	6
18	28	52	112	180	112	36	8	6
19	22	52	112	200	96	36	8	6
20	112	52	128	200	96	28	8	6
21	128	52	128	200	96	28	8	6
22	72	52	144	200	112	28	8	6
23	62	44	144	220	112	28	8	6
24	244	44	160	220	96	28	8	6
25	316	44	160	244	96	28	8	6
26	180	44	160	220	84	28	8	6
27	128	44	160	200	84	22	8	6
28	112	44	180	180	84	22	8	6
29	200	.....	200	160	84	22	8	6
30	784	.....	200	160	96	22	8	6
31	744	.....	220	.....	96	.....	6	6

NOTE.—Discharge Dec. 31, 1910, interpolated by engineers of United States Geological Survey.

Monthly discharge of Pilot Creek near Quintette, Cal., for 1910–11.

[Drainage area, 18.7 square miles.]

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1910.				
February 24–8	76	35	61.8	613
March	343	76	156	9,590
April	150	47	105	6,250
May	47	15	29.8	1,830
June	15	7	8.9	530
July	7	7	7.0	430
August	7	7	7.0	430
September	36	4	8.1	482
October	12	4	7.7	473
November	16	4	4.9	292
December	36	4	9.2	566
The period				21,500
1911.				
January	784	4	123	7,560
February	370	44	98.4	5,460
March	220	44	127	7,810
April	584	160	246	14,600
May	180	84	117	7,190
June	84	22	45.9	2,730
July	22	6	11.0	676
August	6	6	6.0	369
The period				46,400

PILOT CREEK DITCH NEAR QUINTETTE, CAL.

Location.—Just south of the gaging station on Pilot Creek.

Cooperation.—Record of daily discharge furnished by Stone & Webster Engineering Corporation.

The amount diverted by the ditch is added to the flow at the Bacchi road crossing to determine the total run-off from the drainage area of the creek above this point.

Daily discharge, in second-feet, of Pilot Creek ditch near Quintette, Cal., for 1910–11.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910.											
1	.....	11	11	13	11	9	8	11	14	5	7
2	.....	11	11	13	11	11	8	11	14	5	7
3	.....	11	11	13	14	11	8	11	14	4	14
4	.....	11	0	13	14	11	8	14	14	4	11
5	.....	11	0	13	14	11	9	14	14	4	11
6	.....	11	0	13	14	11	9	11	14	4	9
7	.....	11	0	13	14	9	9	14	14	4	9
8	.....	11	8	13	14	9	9	14	14	4	7
9	.....	13	6	11	14	9	9	14	14	7	7
10	.....	13	6	13	13	8	9	14	14	5	7
11	.....	13	8	11	13	8	9	14	17	5	14
12	.....	13	6	11	13	8	9	14	17	11	9
13	.....	13	6	13	13	8	9	14	14	7	9
14	.....	13	6	13	13	6	9	14	14	7	9
15	.....	13	5	13	13	6	9	17	14	5	9
16	.....	13	5	13	13	8	9	14	14	5	7
17	.....	13	5	13	13	8	9	11	14	5	7
18	.....	13	5	13	11	8	9	11	14	7	7
19	.....	13	5	13	11	8	9	9	14	7	7
20	.....	15	5	13	11	9	9	9	14	7	7
21	.....	13	5	13	11	9	9	9	14	5	7
22	.....	11	5	13	11	9	9	9	14	5	7
23	.....	11	5	13	11	9	9	9	14	7	7
24	.....	11	4	13	11	9	9	9	14	5	7
25	11	11	4	13	11	9	9	11	14	14	7
26	11	9	13	13	9	9	9	11	11	9	5
27	11	11	13	13	9	9	9	14	11	9	5
28	11	11	13	13	9	9	9	14	9	7	4
29	.....	11	13	13	9	9	9	14	7	7	5
30	.....	11	13	13	9	8	9	14	7	7	5
31	.....	11	.....	13	.....	8	9	.....	5	.....	4

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911.								
1	4	.....	.....	.....	.....	0	7	9
2	5	.....	.....	.....	.....	0	7	9
3	4	.....	.....	.....	.....	0	7	9
4	3	.....	.....	.....	.....	0	7	9
5	5	.....	.....	.....	.....	0	11	9
6	5	.....	.....	.....	.....	0	11	9
7	5	.....	.....	.....	.....	0	11	9
8	5	.....	.....	.....	.....	0	11	9
9	11	.....	.....	.....	.....	0	11	9
10	11	.....	.....	.....	.....	0	11	9
11	9	.....	.....	.....	.....	9	14	9
12	14	.....	.....	.....	.....	9	14	9
13	0	.....	.....	.....	.....	9	11	9
14	0	.....	.....	.....	.....	9	11	9
15	0	.....	.....	.....	.....	9	14	9
16	0	.....	.....	.....	.....	9	11	9
17	0	.....	.....	.....	.....	9	11	9
18	0	.....	.....	.....	.....	9	11	9
19	0	.....	.....	.....	.....	7	11	7
20	0	.....	.....	.....	.....	7	11	7
21	0	.....	.....	.....	.....	7	11	7
22	0	.....	.....	.....	.....	7	11	7
23	0	.....	.....	.....	.....	7	11	7
24	0	.....	.....	.....	.....	7	11	7
25	0	.....	.....	.....	.....	7	11	7
26	0	.....	.....	.....	.....	7	11	7
27	0	.....	.....	.....	.....	7	11	7
28	0	.....	.....	.....	.....	7	9	7
29	0	.....	.....	.....	.....	7	9	7
30	0	.....	.....	.....	.....	7	9	7
31	0	.....	.....	.....	.....	.....	9	5

NOTE.—Ditch dry Jan. 13 to June 10, 1911.

Monthly discharge of Pilot Creek ditch near Quintette, Cal., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1910.				
March	15	9	11.8	726
April	13	0	6.6	393
May	13	11	12.8	787
June	14	9	11.9	708
July	11	6	8.8	541
August	9	8	8.9	547
September	17	9	12.3	732
October	17	5	13.1	806
November	14	4	6.2	369
December	14	4	7.6	467
The period				6,080
1911.				
January	14	0	2.6	160
February	0	0	.0	0
March	0	0	.0	0
April	0	0	.0	0
May	0	0	.0	0
June	9	0	5.2	309
July	14	7	10.5	646
August	9	5	8.1	498
The period				1,610

SOUTH FORK OF AMERICAN RIVER AT KYBURZ, CAL.

Location.—At Nielson's ranch (Kyburz post office), in the NE. ¼ sec. 28, T. 11 N., R. 15 E., half a mile above junction with Silver Fork and half a mile below Slippery Ford.

Records available.—April 11, 1906, to September 1, 1906, and September 1, 1907, to December 14, 1907.

Drainage area.—Not measured.

Gage.—Vertical staff on right bank.

Channel.—Sand and gravel; fairly smooth.

Discharge measurements.—Made from a car and cable at gage.

Artificial control.—Flow practically controlled by storage at Echo Lake.

Accuracy.—Results good.

Cooperation.—Record of daily discharge furnished by Duryea, Haehl & Gilman, of San Francisco, Cal.

Daily discharge, in second-feet, of South Fork of American River at Kyburz, Cal., for 1906–1907.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1906.							1906.						
1	.....	284	465	1,800	198	171	16	230	520	1,690	715	176	.....
2	.....	375	503	a1,530	202	.....	17	270	520	1,630	560	176	.....
3	.....	531	520	1,260	196	.....	18	260	606	1,670	512	176	.....
4	.....	560	920	2,360	189	.....	19	271	695	1,890	460	176	.....
5	.....	912	795	1,750	a 190	.....	20	250	695	1,660	445	176	.....
6	.....	795	670	970	190	.....	21	359	695	2,010	a 425	176	.....
7	.....	770	a 606	1,250	189	.....	22	500	645	1,740	a 405	174	.....
8	.....	795	542	986	183	.....	23	a 360	520	1,530	385	173	.....
9	.....	814	1,370	935	187	.....	24	285	560	1,750	389	173	.....
10	.....	907	1,330	868	186	.....	25	240	585	1,240	386	172	.....
11	199	1,040	1,800	823	182	.....	26	240	570	1,240	325	171	.....
12	190	670	1,750	935	181	.....	27	260	585	1,000	314	172	.....
13	191	625	1,270	729	180	.....	28	240	464	986	259	172	.....
14	195	740	1,550	832	179	.....	29	a 250	416	1,060	a 234	172	.....
15	a 230	645	1,130	628	178	.....	30	260	403	880	209	172	.....
							31	.....	425	.....	202	172	.....

a Discharge estimated or interpolated by engineers of the United States Geological Survey from record of discharge of American River at Fairoaks and South Fork of American River near Kyburz.

Daily discharge, in second-feet, of South Fork of American River at Kyburz, Cal., for 1906–1907—Continued.

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1907.					1907.				
1	58	*a* 26	44	30	16	39	*a* 20	20	.....
2	58	*a* 25	40	20	17	40	*a* 20	20	.....
3	55	25	32	32	18	38	20	20	.....
4	*a* 56	23	32	*a* 31	19	*a* 36	23	20	.....
5	*a* 57	23	30	*a* 31	20	*a* 33	35	20	.....
6	58	23	*a* 28	30	21	*a* 30	28	21	.....
7	62	20	*a* 25	52	22	28	40	21	.....
8	60	20	23	38	23	28	*a* 41	22	.....
9	56	*a* 25	23	30	24	28	42	20	.....
10	55	30	20	*a* 80	25	28	52	20	.....
11	*a* 51	23	20	*a* 70	26	28	44	20	.....
12	*a* 46	23	20	*a* 60	27	28	60	19	.....
13	42	20	*a* 20	60	28	*a* 28	72	19	.....
14	40	20	*a* 20	30	29	28	*a* 65	18	.....
15	40	*a* 20	20	.....	30	26	*a* 58	19	.....
					31	.....	*a* 51	.....	.....

a Discharge estimated or interpolated by engineers of United States Geological Survey from records of discharge of American River at Fair oaks and South Fork of American River near Kyburz.

Monthly discharge of South Fork of American River at Kyburz, Cal., for 1906–7.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1906.				
April 11–30	500	190	264	10,500
May	1,040	284	625	38,400
June	2,010	465	1,240	73,800
July	2,360	202	770	47,300
August	202	171	180	11,100
1907.				
September	62	26	42.0	2,500
October	72	20	32.8	2,020
November	44	18	23.2	1,380
December 1–14	80	20	42.4	1,180

SOUTH FORK OF AMERICAN RIVER BELOW SILVER FORK, AT KYBURZ, CAL.

Location.—At the bridge just below the mouth of Silver Fork directly above the intake of Eldorado canal and about half a mile below Kyburz post office.

Records available.—February 25, 1906, to August 4, 1906.

Drainage area.—Not measured.

Gage.—Vertical staff on right pier of bridge.

Channel.—Contains bowlders; rough.

Discharge measurements.—Made from bridge.

Artificial control.—Flow partly regulated by storage at Echo and Silver lakes.

Accuracy.—Results fair.

Cooperation.—Record of daily discharge furnished by Duryea, Haehl & Gilman, of San Francisco.

Daily discharge, in second-feet, of South Fork of American River below Silver Fork, at Kyburz, Cal., for 1906.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1	.....	191	612	1,190	1,590	3,200	516
2	.....	a 208	478	1,300	1,380	a 2,720	470
3	.....	225	492	1,850	1,820	2,240	490
4	.....	a 206	390	1,750	2,500	2,940	459
5	.....	a 187	350	2,560	2,220	2,540	.....
6	.....	168	469	2,010	1,680	1,900	.....
7	.....	234	478	2,010	1,590	2,610	.....
8	.....	307	612	2,100	1,640	a 2,000	.....
9	.....	350	711	2,500	3,510	1,840	.....
10	.....	345	670	2,260	3,540	1,700	.....
11	.....	a 488	676	2,500	4,880	1,630	.....
12	.....	632	565	1,820	4,840	1,780	.....
13	.....	478	670	2,070	3,200	1,850	.....
14	.....	375	740	2,070	3,280	1,580	.....
15	.....	a 355	1,020	2,100	2,940	1,180	.....
16	.....	a 335	1,020	1,600	4,040	1,220	.....
17	.....	a 315	1,080	1,750	3,800	1,140	.....
18	.....	296	1,060	1,850	4,060	1,030	.....
19	.....	275	a 1,080	2,310	4,630	958	.....
20	.....	239	a 1,050	1,900	3,770	a 958	.....
21	.....	286	1,370	1,900	4,200	a 958	.....
22	.....	386	a 1,800	1,750	3,380	a 958	.....
23	.....	442	1,600	1,590	2,600	958	.....
24	.....	652	860	1,540	2,700	923	.....
25	267	670	728	1,820	2,710	882	.....
26	238	612	728	1,600	2,620	845	.....
27	.....	531	790	1,900	1,820	825	.....
28	239	442	670	1,360	1,640	667	.....
29	.....	472	a 730	1,260	1,690	a 623	.....
30	.....	478	790	1,280	1,750	579	.....
31	.....	750	.....	1,360	.....	534	.....

a Discharge estimated or interpolated by engineers of United States Geological Survey from records of discharge of American River at Fairoaks and South Fork of American River at Kyburz.

Monthly discharge of South Fork of American River below Silver Fork, at Kyburz, Cal., for 1906.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
March	750	168	385	23,700
April	1,800	350	810	48,200
May	2,560	1,190	1,830	113,000
June	4,880	1,380	2,870	171,000
July	3,200	534	1,480	91,000

SOUTH FORK OF AMERICAN RIVER NEAR KYBURZ, CAL.

Location.—About half a mile below intake of Eldorado canal and mouth of Silver Fork and 1 mile below Kyburz post office.

Records available.—August 31, 1907, to December 14, 1907.

Drainage area.—Not measured.

Gage.—Recording; on left bank.

Discharge measurements.—Made from car and cable.

Diversions and storage.—Flow partly regulated by storage at Echo and Silver lakes. The Eldorado canal, which supplies water for irrigation and mining, carries about 60 second-feet during the irrigation season (June 15 to Sept. 30) and about 30 second-feet during the remainder of the year.

Accuracy.—Results are good.

Cooperation.—Record of daily discharge furnished by Duryea, Haehl & Gilman. of San Francisco, Cal.

Daily discharge, in second-feet, of South Fork of American River near Kyburz, Cal., for 1907.

Day.	Sept.	Oct.	Nov.	Dec..	Day.	Sept.	Oct.	Nov.	Dec.
1	85	*a* 43	48	20	16	40	*a* 19	42	.....
2	80	*a* 37	40	20	17	38	*a* 18	42	.....
3	*a* 86	30	35	20	18	32	18	42	.....
4	*a* 92	20	30	*a* 20	19	*a* 29	20	42	.....
5	98	20	28	*a* 20	20	*a* 26	35	42	.....
6	89	20	37	70	21	*a* 23	30	41	.....
7	82	20	46	88	22	20	40	41	.....
8	80	20	55	70	23	20	*a* 42	41	.....
9	75	*a* 25	53	50	24	16	45	38	.....
10	75	30	50	*a* 120	25	25	63	40	.....
11	*a* 71	20	50	*a* 90	26	50	52	38	.....
12	*a* 66	20	48	70	27	50	65	36	.....
13	62	20	47	80	28	*a* 50	78	32	.....
14	56	20	46	35	29	49	*a* 71	30	.....
15	55	*a* 20	45	.....	30	50	*a* 63	30	.....
					31	.....	*a* 55	.....	.....

a Estimated or interpolated by engineers of United States Geological Survey from record of discharge of American River at Fairoaks and of South Fork of American River at Kyburz.

Monthly discharge of South Fork of American River near Kyburz, Cal., for 1907.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
September	98	15	55.3	3,290
October	78	18	34.8	2,140
November	55	28	41.2	2,450
December 1–14	120	20	55.2	1,530

SOUTH FORK OF AMERICAN RIVER NEAR PLACERVILLE, CAL.

Location.—Below highway bridge at Chilli Bar, in the SE. ¼ sec. 26, T. 11 N., R. 10 E., about 1,000 feet below Big Canyon Creek, and 3 miles northwest of Placerville.

Records available.—August 11 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Three sections on right bank about 1,000 feet below bridge.

Channel.—Bowlders and gravel.

Discharge measurements.—Made from downstream side of bridge, or by wading.

Diversions.—Just below the mouth of Silver Fork there is a diversion for irrigation, mining, and municipal supply for Placerville. Power is developed near the mouth of Rock Creek by the Western States Gas & Electric Co. Echo and Silver lakes are used as storage reservoirs.

Discharge measurements of South Fork of American River near Placerville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 11[a]	F. C. Ebert	4.58	307
Sept. 24[b]	do	3.68	98

[a] Made from bridge. [b] Made by wading about 250 feet above gage.

Daily gage height, in feet, of South Fork of American River near Placerville, Cal., for 1911.

[Frank Baldschun, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	3.9	3.75	3.8	4.0	16	4.4	3.7	3.85	4.45	3.9
2	.....	3.9	3.8	3.8	4.0	17	4.35	3.7	3.85	4.3	4.1
3	.....	3.9	3.85	3.75	4.0	18	4.3	3.7	3.8	4.2	4.0
4	.....	3.85	3.85	3.75	4.0	19	4.2	3.7	3.75	4.1	3.9
5	.....	3.85	3.9	3.75	4.0	20	4.2	3.7	3.75	4.1	3.9
6	.....	3.85	3.9	3.75	4.0	21	4.5	3.65	3.75	4.1	3.9
7	.....	3.85	3.9	3.8	4.0	22	4.15	3.65	3.7	4.1	3.85
8	.....	3.85	3.85	3.85	4.0	23	4.05	3.7	3.7	4.05	3.85
9	.....	3.8	3.9	3.85	4.0	24	4.05	3.7	3.7	4.05	4.2
10	.....	3.8	4.0	4.6	4.0	25	4.05	3.7	3.75	4.05	3.9
11	4.6	3.8	3.95	4.75	3.95	26	4.0	3.8	3.75	4.05	3.9
12	4.55	3.8	3.95	4.2	3.95	27	4.15	3.8	3.85	4.0	3.9
13	4.5	3.75	3.9	4.2	3.95	28	4.0	3.7	3.9	4.0	4.25
14	4.45	3.75	3.9	4.15	3.95	29	3.95	3.65	3.85	4.0	4.2
15	4.4	3.7	3.85	4.1	3.95	30	3.95	3.75	3.8	4.0	4.2
						31	3.95	.....	3.8	.....	4.2

CACHE CREEK AT LOWER LAKE, CAL.

Location.—Above highway bridge near outlet of Clear Lake, in the SE. ¼ SE. ¼ sec. 34, T. 13 N., R. 7 W., just above Seigler Creek and 1 mile north of Lower Lake.

Records available.—January 1, 1901, to December 31, 1911.

Drainage area.—500 square miles.

Gage.—Vertical staff on left bank 400 feet above bridge. Previous to March 26, 1903, the gage was located at the bridge. The original datum has not been changed.

Channel.—Gravel and permanent.

Discharge measurements.—Made from car and cable 100 feet below gage.

Accuracy.—Results are good.

Discharge measurements of Cache Creek at Lower Lake, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 30	E. O. Christiansen	2.61	39
Dec. 2	S. C. Whipple	2.43	25

Daily gage height, in feet, of Cache Creek at Lower Lake, Cal., for 1911.

[J. R. Anderson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.85	3.85	4.65	6.8	5.8	5.0	4.25	3.7	3.1	2.75	2.60	2.50
2	1.9	4.1	4.65	6.8	5.8	5.0	4.25	3.65	3.1	2.75	2.60	2.45
3	1.85	4.1	5.55	6.75	5.75	4.95	4.25	3.65	3.1	2.8	2.60	2.45
4	1.85	4.15	5.1	6.6	5.75	4.9	4.2	3.6	3.1	2.7	2.60	2.45
5	1.85	4.2	5.65	6.75	5.75	4.9	4.2	3.6	3.05	2.7	2.58	2.40
6	1.85	4.25	7.4	6.75	5.75	4.9	4.15	3.55	3.0	2.7	2.58	2.55
7	1.9	4.25	7.8	6.7	5.75	4.85	4.15	3.55	3.0	2.7	2.65	2.55
8	1.9	4.25	7.9	6.6	5.7	4.85	4.15	3.5	3.0	2.65	2.60	2.50
9	2.1	4.3	7.65	6.6	5.6	4.8	4.1	3.5	2.95	2.75	2.55	2.50
10	1.8	4.3	7.8	6.6	5.55	4.8	4.1	3.5	2.9	2.7	2.80	2.50
11	2.0	4.4	7.8	6.75	5.5	4.75	4.1	3.45	2.9	2.65	2.55	2.45
12	1.95	4.45	7.75	6.5	5.6	4.75	4.05	3.45	2.9	2.65	2.52	2.45
13	2.05	4.7	7.75	6.4	5.5	4.75	4.0	3.4	2.85	2.7	2.50	2.45
14	2.05	4.6	7.8	6.35	5.45	4.7	4.0	3.4	2.9	2.7	2.52	2.45
15	2.1	4.65	7.85	6.35	5.5	4.7	4.0	3.35	2.9	2.65	2.60	2.45
16	2.15	4.65	7.75	6.3	5.4	4.7	4.0	3.4	2.85	2.65	2.55	2.50
17	2.15	4.75	7.65	6.3	5.35	4.65	4.0	3.35	2.85	2.65	2.55	2.50
18	2.15	4.7	7.6	6.3	5.4	4.65	3.95	3.35	2.85	2.65	2.55	2.50
19	2.3	4.7	7.5	6.2	5.3	4.65	3.9	3.3	2.8	2.65	2.55	2.52
20	2.5	4.7	7.45	6.15	5.25	4.6	3.9	3.3	2.8	2.65	2.52	2.48
21	2.55	4.7	7.4	6.1	5.25	4.55	3.9	3.25	2.8	2.6	2.52	2.45
22	2.55	4.7	7.35	6.05	5.2	4.55	3.85	3.25	2.8	2.65	2.52	2.45
23	2.55	4.75	7.35	6.05	5.25	4.5	3.8	3.2	2.8	2.65	2.52	2.45
24	2.6	4.75	7.4	6.0	5.25	4.5	3.8	3.2	2.75	2.65	2.50	2.45
25	2.7	4.8	7.25	5.95	5.2	4.45	3.8	3.2	2.75	2.7	2.50	2.42
26	2.7	4.7	7.15	6.0	5.1	4.4	3.75	3.15	2.75	2.6	2.52	2.40
27	3.25	4.65	7.1	5.95	5.1	4.4	3.75	3.15	2.75	2.6	2.52	2.52
28	3.45	4.6	7.0	5.9	5.05	4.4	3.75	3.15	2.75	2.6	2.55	2.48
29	3.6	.....	6.95	5.85	5.1	4.35	3.7	3.1	2.75	2.6	2.52	2.40
30	3.8	.....	6.9	5.85	5.1	4.3	3.7	3.1	2.85	2.6	2.50	2.45
31	3.8	.....	6.8	.....	5.0	.....	3.7	3.1	.....	2.62	.....	2.50

Daily discharge, in second-feet, of Cache Creek at Lower Lake, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4	240	432	1,060	750	520	332	208	99	54	39	30
2	5	296	432	1,060	750	520	332	198	99	54	39	26
3	4	296	675	1,050	735	506	332	198	99	60	39	26
4	4	308	547	999	735	494	320	188	99	49	39	26
5	4	320	705	1,050	735	494	320	188	92	49	37	22
6	4	332	1,260	1,050	735	494	308	178	85	49	37	34
7	5	332	1,390	1,030	735	482	308	178	85	49	44	34
8	5	332	1,430	999	720	482	308	169	85	44	39	30
9	9	344	1,340	999	690	469	296	169	78	54	34	30
10	3	344	1,390	999	675	469	296	169	72	49	60	30
11	7	369	1,390	1,050	660	456	296	160	72	44	34	26
12	6	382	1,380	967	690	456	284	160	72	44	32	26
13	8	444	1,380	935	660	456	273	150	66	49	30	26
14	8	419	1,390	919	646	444	273	150	72	49	32	26
15	9	432	1,410	919	660	444	273	141	72	44	39	26
16	10	432	1,380	903	631	444	273	150	66	44	34	30
17	10	456	1,340	903	617	432	273	141	66	44	34	30
18	10	444	1,320	903	631	432	262	141	66	44	34	30
19	16	444	1,290	872	603	432	251	132	60	44	34	32
20	30	444	1,270	858	589	419	251	132	60	44	32	28
21	34	444	1,260	841	589	406	251	124	60	39	32	26
22	34	444	1,240	826	575	406	240	124	60	44	32	26
23	34	456	1,240	826	589	395	229	115	60	44	32	26
24	39	456	1,260	810	589	394	229	115	54	44	30	26
25	49	469	1,210	795	575	382	229	115	54	49	30	24
26	49	444	1,180	810	547	369	218	107	54	39	32	22
27	124	432	1,160	795	547	369	218	107	54	39	32	32
28	160	419	1,130	780	534	369	218	107	54	39	34	28
29	188	.....	1,110	765	547	356	208	99	54	39	32	22
30	229	.....	1,100	765	547	344	208	99	66	39	30	26
31	229	.....	1,060	.....	520	.....	208	99	.....	41	.....	30

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Cache Creek at Lower Lake, Cal., for 1911.

[Drainage area, 500 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	229	3	42.9	0.086	0.10	2,640	A.
February	469	240	392	.784	.82	21,800	A.
March	1,430	432	1,160	2.32	2.68	71,300	A.
April	1,060	765	918	1.84	2.05	54,600	A.
May	750	520	639	1.28	1.48	39,300	A.
June	520	344	438	.876	.98	26,100	A.
July	332	208	268	.536	.62	16,500	A.
August	208	99	146	.292	.34	8,980	A.
September	99	54	71.2	.142	.16	4,240	A.
October	60	39	45.7	.091	.10	2,810	A.
November	60	30	35.3	.071	.08	2,100	A
December	34	22	27.6	.055	.06	1,700	A.
The year	1,410	3	348	.696	9.47	252,000	

CACHE CREEK AT YOLO, CAL.

Location.—At highway bridge one-half mile south of Yolo, in Río Jesús María land grant, 1,000 feet above Southern Pacific Railroad bridge at Yolo.

Records available.—January 1, 1903, to December 31, 1911.

Drainage area.—1,230 square miles.

Gage.—Staff in four sections. Lower section is vertical and fastened to pile under bridge. Second section, which is inclined, is on right bank 30 feet above bridge. Third section is vertical and fastened to cottonwood tree on right bank 70 feet above bridge. Upper section is bolted to upper end of right abutment. This gage was installed October 2, 1904, at the same datum as the original gage at the bridge.

Channel.—Sand and gravel and somewhat shifting.

Discharge measurements.—Made from bridge or by wading.

Diversions.—Numerous ditches take water for irrigation above the station.

Accuracy.—High-water estimates are fair. Otherwise the results are good.

Discharge measurements of Cache Creek at Yolo, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 16	J. E. Stewart	2.03	256
25	do	3.87	1,180
Mar. 20	do	5.45	1,890
May 8	do	3.38	814
July 10[a]	do	1.84	150
Oct. 11[b]	do	.40	0
Dec. 5[c]	Ebert and Lee		0

[a] Made by wading about 300 feet above gage. [b] Water standing in pools. [c] Creek dry.

Daily gage height, in feet, of Cache Creek at Yolo, Cal., for 1911.

[Cornelia W. Bigelow, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1	.....	6.0	3.95	4.55	3.55	2.7	1.95	1.35	0.9	0.9
2	.....	5.5	4.4	4.5	3.5	2.65	1.95	1.35	.9	.9
3	.....	5.7	7.8	4.45	3.5	2.65	1.9	1.3	.9	.....
4	.....	5.0	9.95	4.4	3.5	2.6	1.9	1.3	.9	.....
5	.....	4.6	17.1	4.5	3.45	2.55	1.9	1.25	.....	.....
6	.....	4.4	17.5	5.4	3.45	2.55	1.9	1.25	.....	.....
7	.....	4.1	25.0	4.8	3.4	2.7	1.85	1.2	.....	.....
8	.....	3.9	16.6	4.55	3.4	2.65	1.8	1.2	.....	.....
9	.....	3.65	10.55	4.45	3.35	2.6	1.75	1.2	.....	.....
10	.....	3.5	8.9	4.4	3.3	2.55	1.75	1.2	.....	.....
11	.....	3.9	7.8	4.4	3.3	2.5	1.7	1.15	1.15	.....
12	.....	4.6	7.1	4.3	3.25	2.45	1.7	1.15	1.15	.....
13	.....	4.5	6.7	4.2	3.2	2.45	1.7	1.15	1.15	.....
14	2.15	4.4	6.35	4.15	3.1	2.4	1.7	1.1	1.1	.....
15	2.4	4.15	6.1	4.1	3.0	2.4	1.65	1.1	1.1	.....
16	2.1	3.95	6.0	4.1	2.95	2.35	1.65	1.1	1.1	.....
17	1.85	3.85	5.8	4.0	2.9	2.35	1.65	1.1	1.1	.....
18	1.6	3.75	5.7	3.95	2.9	2.3	1.65	1.05	1.1	.....
19	1.5	3.7	5.6	3.9	2.9	2.25	1.65	1.05	1.1	.....
20	4.9	3.65	5.5	3.85	2.85	2.25	1.6	1.05	1.1	.....
21	3.85	3.5	5.4	3.8	2.85	2.2	1.6	1.0	1.1	.....
22	2.7	3.45	5.2	3.75	2.85	2.2	1.6	1.0	1.1	.....
23	2.25	3.4	5.15	3.75	2.85	2.15	1.6	1.0	1.1	.....
24	2.2	3.35	5.1	3.7	2.85	2.1	1.6	1.0	1.05	.....
25	3.85	3.3	5.0	3.7	2.8	2.1	1.55	1.0	1.05	.....
26	3.4	3.3	4.9	3.7	2.8	2.05	1.55	.95	1.05	.....
27	3.3	3.25	4.8	3.65	2.8	2.0	1.5	.95	1.0	.....
28	10.4	3.2	4.75	3.65	2.8	2.0	1.45	.95	1.0	.....
29	12.45	.....	4.7	3.6	2.75	1.95	1.45	.95	.95	.....
30	8.35	.....	4.65	3.6	2.75	1.95	1.4	.9	.95	.....
31	9.15	.....	4.6	.....	2.7	.....	1.4	.9	.....	.....

NOTE.—All gage heights are considered reliable at this station, except from about May 12 to the first part of July. During this period the readings appear to have been partly estimated by the observer and partly read on a gage which was known to be 0.2 foot too high. These readings are all subject to an error of from 0.1 to 0.2 foot. Water standing in pools or creek dry Jan. 1–13, Sept. 5–10, and Oct. 3 to Dec. 31.

Daily discharge, in second-feet, of Cache Creek at Yolo, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	2,370	1,050	1,380	850	450	180	36	1	1	0	0
2	0	1,990	1,300	1,350	825	430	180	36	1	1	0	0
3	0	2,140	3,820	1,320	825	430	165	27	1	0	0	0
4	0	1,650	5,650	1,300	825	410	165	27	1	0	0	0
5	0	1,410	11,700	1,350	800	390	165	20	0	0	0	0
6	0	1,300	12,100	1,920	800	390	165	20	0	0	0	0
7	0	1,130	18,400	1,530	775	450	152	14	0	0	0	0
8	0	1,020	11,300	1,380	775	430	138	14	0	0	0	0
9	0	902	6,160	1,320	750	410	125	14.	0	0	0	0
10	0	835	4,760	1,300	725	390	125	14	0	0	0	0
11	0	1,020	3,820	1,300	725	370	112	10	10	0	0	0
12	0	1,410	3,250	1,240	700	350	112	10	10	0	0	0
13	0	1,350	2,930	1,180	675	350	112	10	10	0	0	0
14	288	1,300	2,650	1,160	630	330	112	7	7	0	0	0
15	375	1,160	2,450	1,130	585	330	100	7	7	0	0	0
16	270	1,050	2,370	1,130	562	312	100	7	7	0	0	0
17	190	1,000	2,220	1,080	540	312	100	7	7	0	0	0
18	120	950	2,140	1,050	540	295	100	5	7	0	0	0
19	95	925	2,060	1,020	540	278	100	5	7	0	0	0
20	1,590	902	1,990	1,000	518	278	88	5	7	0	0	0
21	1,000	835	1,920	975	518	260	88	3	7	0	0	0
22	490	812	1,780	950	518	260	88	3	7	0	0	0
23	322	790	1,750	950	518	242	88	3	7	0	0	0
24	305	768	1,720	925	518	225	88	3	5	0	0	0
25	1,000	745	1,650	925	495	225	77	3	5	0	0	0

Daily discharge, in second-feet, of Cache Creek at Yolo, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
26	790	745	1,590	925	495	210	77	2	5	0	0	0
27	745	722	1,530	902	495	195	66	2	3	0	0	0
28	6,030	700	1,500	902	495	195	56	2	3	0	0	0
29	7,770	.....	1,470	880	472	180	56	2	2	0	0	0
30	4,290	.....	1,440	880	472	180	45	1	2	0	0	0
31	4,970	.....	1,410	.....	450	.....	45	1	.....	0	.....	0

NOTE.—Daily discharge determined from two curves which are fairly well defined, except at high stages where theyare somewhat poorly defined and are applicable as follows: Jan. 1 to Apr. 30 and May 1 to Dec. 31, 1911. Discharge May 12 to about July 15 subject to 5 to 20 per cent error. The apparent rise June 7 is due to error of gage readings.

Monthly discharge of Cache Creek at Yolo, Cal., for 1911.

[Drainage area, 1,230 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	7,770	0	988	0.803	0.93	60,800	B.
February	2,370	700	1,140	.927	.97	63,300	B.
March	18,400	1,050	3,870	3.15	3.63	238,000	C.
April	1,920	880	1,160	.943	1.05	69,000	B.
May	850	450	626	.509	.59	38,500	C.
June	450	180	319	.259	.29	18,900	C.
July	180	45	109	.089	.10	6,700	C.
August	36	1	10.3	.0084	.01	633	D.
September	10	0	4.3	.0035	.004	256	D.
October	1	0	0.1	.0000	.000	4	
November	0	0	.0	.0000	.000	0	
December	0	0	.0	.0000	.000	0	
The year	18,400	0	685	.557	7.573	496,000	

PUTAH CREEK AT WINTERS, CAL.

Location.—Just below Southern Pacific Co.'s railroad bridge in Winters, in the Río de los Putos grant.

Records available.—September 26, 1905, to December 31, 1911.

Drainage area.—805 square miles.

Gage.—Staff in five sections on left bank, 600 feet below bridge. An auxiliary vertical staff on right bank is used for low water. The original gage datum has been maintained.

Channel.—Sand and gravel and somewhat shifting. Two channels at low water.

Discharge measurements.—Made from car and cable at gage and by wading.

Diversions.—With the exception of a small amount of water pumped for irrigation, there are no diversions above the station.

Accuracy.—Results are fair except for low water, which are only approximate. Beginning about May 17, 1911, a temporary dam was constructed across the creek 500 feet below the gages, ponding water for recreation purposes. This dam was partially destroyed October 2, 1911.

Discharge measurements of Putah Creek at Winters, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 17	J. E. Stewart	5.79[a]	604
25	do	9.83[a]	3,690
Mar. 21	do	6.19[a]	848
May 8[b]	do	4.73[a]	212
31[d]	do	8.98[c]	95
July 10[d]	do	9.81[c]	21
Oct. 17[e]	do	4.57[c]	8.2

[a] North channel gage.
[b] Measurement by wading 400 feet below gage.
[c] South channel gage.
[d] Measurement by wading 500 feet below gage; affected by backwater from temporary dam.
[e] Measurement by wading 50 feet below gage.

Daily gage height, in feet, of Putah Creek at Winters, Cal., for 1911.

[Erna Wyatt, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.06	9.57	6.26	5.26	4.85	.....	.....	.....	.....	.....	4.58	4.67
2	4.06	8.88	6.32	5.23	4.84	.....	.....	.....	.....	.....	4.58	4.66
3	4.06	9.08	10.60	5.21	4.84	.....	.....	.....	.....	4.67	4.57	4.65
4	4.06	8.18	9.30	5.14	4.83	.....	.....	.....	.....	4.67	4.57	4.67
5	4.06	7.38	17.15	6.12	4.75	.....	.....	.....	.....	4.67	4.57	4.72
6	4.06	7.58	18.80	7.57	4.74	.....	.....	.....	.....	4.62	4.57	4.76
7	4.06	7.03	26.22	6.54	4.74	.....	.....	.....	.....	4.62	4.57	4.75
8	4.06	6.72	15.30	6.16	4.74	.....	.....	.....	.....	4.57	4.57	4.75
9	4.06	6.44	12.20	.....	4.74	.....	.....	.....	.....	4.77	4.62	4.75
10	4.07	6.25	9.20	6.44	4.75	.....	.....	.....	.....	4.57	4.67	4.72
11	4.13	9.88	9.00	6.09	4.84	.....	.....	.....	.....	4.57	4.67	4.72
12	4.24	7.98	8.27	5.89	4.79	.....	.....	.....	.....	4.57	4.77	4.72
13	7.78	9.38	7.67	5.74	4.76	.....	.....	.....	.....	4.52	4.82	4.72
14	10.58	7.98	7.38	5.59	4.76	.....	.....	.....	.....	4.52	4.82	4.72
15	9.38	7.28	7.13	5.52	4.74	.....	.....	.....	.....	4.47	4.77	4.72
16	6.44	6.74	6.99	5.44	4.74	.....	.....	.....	.....	4.47	4.66	4.72
17	5.79	6.54	6.76	5.37	.....	.....	.....	.....	.....	4.52	4.66	4.72
18	5.45	6.34	6.68	5.32	.....	.....	.....	.....	.....	4.52	4.66	4.72
19	5.35	6.22	6.44	.....	.....	.....	.....	.....	.....	4.47	4.57	4.72
20	15.20	6.07	6.29	5.15	.....	.....	.....	.....	.....	4.47	4.57	4.72
21	7.97	5.94	6.14	5.14	.....	.....	.....	.....	.....	4.47	.....	4.69
22	6.60	5.83	6.04	5.08	.....	.....	.....	.....	.....	4.47	4.67	4.69
23	6.04	5.76	5.94	5.04	.....	.....	.....	.....	.....	4.47	4.67	4.74
24	7.83	5.66	5.76	5.04	.....	.....	.....	.....	.....	4.57	4.67	4.74
25	9.38	5.62	5.72	4.99	.....	.....	.....	.....	.....	4.62	4.67	4.75
26	8.38	5.54	5.64	4.96	.....	.....	.....	.....	.....	4.62	4.67	4.75
27	8.38	5.49	5.56	4.94	.....	.....	.....	.....	.....	4.62	4.67	4.77
28	17.30	5.47	5.53	4.94	.....	.....	.....	.....	.....	4.62	4.67	4.77
29	15.30	.....	5.44	4.94	.....	.....	.....	.....	.....	4.62	4.67	4.77
30	12.48	.....	5.42	4.94	.....	.....	.....	.....	.....	4.62	4.67	4.77
31	13.30	.....	5.33	.....	.....	.....	.....	.....	.....	4.60	.....	4.87

NOTE.—Gage heights observed on North Channel gage Jan. 1 to May 22 (except Mar. 12 and 13, which were the same on both gages and June 19 to 24. Gage heights observed on south gage May 23 to June 18 and June 25 to Dec. 31. Gage heights about May 17 to Dec. 31 affected by back water from temporary dam constructed about 400 feet below the station to form a boating and swimming pool. The gage heights during most of the period May 17 to Oct. 2 were between 8 and 10 feet, and are omitted, since frequent changes in the dam render them useless as an index of the discharge. There was relatively little back water Oct. 3 to Dec. 31, and the relation of gage height to discharge was stable. Gage heights Mar. 5 to 7 determined from hydrograph.

Daily discharge, in second-feet, of Putah Creek at Winters, Cal., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	28	3,590	889	389	245	.....	.....	.....	.....	20	9	17
2	28	2,950	928	377	242	.....	.....	.....	.....	20	9	16
3	28	3,130	4,600	369	242	.....	.....	.....	.....	17	8	15
4	28	2,340	3,340	344	239	.....	.....	.....	.....	17	8	17
5	28	1,680	12,500	807	218	.....	.....	.....	.....	17	8	22
6	28	1,840	15,000	1,830	215	.....	.....	.....	.....	12	8	27
7	28	1,420	28,300	1,070	215	.....	.....	.....	.....	12	8	26
8	28	1,200	9,960	831	215	.....	.....	.....	.....	8	8	26
9	28	1,010	6,280	920	215	.....	.....	.....	.....	28	12	26
10	29	882	3,240	1,010	218	.....	21	.....	.....	8	17	22
11	36	3,890	3,060	790	242	.....	.....	.....	.....	8	17	22
12	53	2,170	2,410	680	228	.....	.....	.....	.....	8	28	22
13	2,000	3,410	1,910	605	220	.....	.....	.....	.....	5	35	22
14	4,580	2,170	1,680	530	220	.....	.....	.....	.....	5	35	22
15	3,410	1,600	1,490	499	215	.....	.....	.....	.....	3	28	22
16	1,010	1,210	1,390	463	215	.....	.....	.....	.....	3	16	22
17	604	1,070	1,230	433	.....	.....	.....	.....	.....	5	16	22
18	432	941	1,170	413	.....	.....	.....	.....	.....	5	16	22
19	388	863	1,010	380	.....	.....	.....	.....	.....	3	8	22
20	9,830	767	908	348	.....	.....	.....	.....	.....	3	8	22
21	2,160	689	819	344	.....	.....	.....	.....	.....	3	12	19
22	1,120	676	762	323	.....	.....	.....	.....	.....	3	17	19
23	749	588	707	309	.....	.....	.....	.....	.....	3	17	25
24	2,040	535	615	309	.....	.....	.....	.....	.....	8	17	25
25	3,410	515	595	292	.....	.....	.....	.....	.....	12	17	26
26	2,510	475	555	281	.....	.....	.....	.....	.....	12	17	26
27	2,510	450	517	274	.....	.....	.....	.....	.....	12	17	28
28	12,800	442	504	274	.....	.....	.....	.....	.....	12	17	28
29	9,960	.....	463	274	.....	.....	.....	.....	.....	12	17	28
30	6,590	.....	454	274	.....	.....	.....	.....	.....	12	17	28
31	7,490	.....	417	.....	95	.....	.....	.....	.....	10	.....	41

NOTE.—Daily discharge based on three discharge rating curves applicable as follows; Jan. 1 to Mar. 20, fairly well defined; Mar. 21 to May 16, fairly well defined; Oct. 3 to Dec. 31, based on one measurement in 1911, and two in 1912, and not well defined. Discharge Oct. 1 and 2 estimated.

Monthly discharge of Putah Creek at Winters, Cal., for 1911.

[Drainage area, 805 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	12,800	28	2,390	2.97	3.42	147,000	C.
February	3,890	442	1,520	1.89	1.97	81,600	B.
March	28,300	417	3,470	4.31	4.97	213,000	C.
April	1,830	274	535	.665	.74	31,800	C.
May 1–16	245	215	225	.280	.17	7,140	C.
October	28	3	9.9	.012	.01	609	D.
November	35	8	15.6	.019	.02	898	D.
December	41	15	23.5	.029	.03	1,440	D.

NORTHERN PACIFIC OCEAN DRAINAGE BASINS.

RUSSIAN RIVER BASIN.

RUSSIAN RIVER NEAR UKIAH, CAL.

Location.—At Bailey's bridge, in the Yokayo grant, just above junction with East Fork, 3 miles northeast of Ukiah.

Records available.—August 18 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Painted on left abutment of bridge.

Channel.—Sand and gravel; may shift slightly at high water.

Discharge measurements.—Made from bridge or by wading.

Discharge measurements of Russian River near Ukiah, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 18	E. O. Christiansen	3.12	0.5
Nov. 2	do	3.10	*a* .2
Nov. 20[b]	Whipple and Stanley	3.25	.5

a Estimated. *b* Made by wading by engineers of Irrigation Investigations, Department of Agriculture.

Daily gage height, in feet, of Russian River near Ukiah, Cal., for 1911.

[W. F. Lawrance, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1		3.10	2.95	3.14	3.16	16		2.88	2.98	3.14	3.40
2		3.10	3.00	3.10	3.20	17		2.88	3.02	3.16	3.45
3		3.11	2.96	3.10	3.30	18		2.88	3.01	3.16	3.45
4		3.12	2.96	3.10	3.30	19	3.11	2.88	3.04	3.16	3.40
5		3.12	2.97	3.11	3.30	20	3.12	2.88	3.04	3.16	3.40
6		3.11	2.96	3.11	3.32	21	3.05	2.88	3.04	3.20	3.38
7		3.14	2.97	3.11	3.32	22	3.11	2.88	3.01	3.20	3.38
8		3.14	2.96	3.11	3.35	23	3.14	2.88	3.04	3.20	3.38
9		3.14	2.98	3.12	3.38	24	3.14	2.88	3.04	3.20	3.38
10		3.12	2.98	3.14	3.38	25	3.14	2.88	3.04	3.20	3.38
11		2.95	2.97	3.14	3.38	26	3.10	2.88	3.04	3.20	3.38
12		2.95	2.97	3.14	3.38	27	3.10	2.88	3.04	3.18	3.51
13		2.95	2.98	3.14	3.38	28	3.10	2.88	3.04	3.18	3.78
14		2.88	2.98	3.14	3.38	29	3.10	2.88	3.04	3.18	3.70
15		2.88	2.98	3.14	3.40	30	3.08	2.88	3.04	3.16	3.55
						31	3.10		3.04		3.75

RUSSIAN RIVER AT GEYSERVILLE, CAL.

Location.—At highway bridge, in the Tzabaco grant, half a mile northeast of Geyserville.

Records available.—December 5, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Painted on lower caisson of sixth pier from right end of bridge, with a vertical staff for low water.

Channel.—Gravel; smooth; section shifts slightly during high water. Overflow section on left bank.

Discharge measurements.—Made from upstream side of bridge and by wading.

Diversions.—Water is diverted from the South Eel to the East Fork of Russian River for use in power development at Potter Valley.

Estimates are withheld until additional measurements are available.

Discharge measurements of Russian River at Geyserville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 4	J. E. Stewart	11.00	2,680
June 24[a]	E. A. Ingham	9.40	213
July 22[a]	....do	8.95	52
Aug. 18	E. O. Christiansen	8.62	c 2
Oct. 29[b]	....do	8.63	10
Nov. 24[a]	Stanley and Whipple	8.85	40

[a] Made by wading. [b] Made by wading 200 feet above gage. [c] Estimated.

NOTE.—Measurements made June 24, July 22, and Nov. 24 by engineers of Irrigation Investigations, Department of Agriculture.

Daily gage height, in feet, of Russian River at Geyserville, Cal., for 1911.

[R. E. Smith, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.4	12.7	10.2	9.95	9.78	9.10	9.36	8.78	8.30	8.10	8.58	8.88
2	9.4	12.7	10.2	9.9	9.78	9.50	9.36	8.76	8.25	8.10	8.60	8.88
3	9.35	11.8	10.7	9.9	9.75	9.55	9.36	8.75	8.05	8.15	8.60	8.88
4	9.35	11.5	11.0	10.0	9.70	9.55	9.35	8.76	7.88	8.12	8.62	8.90
5	9.3	11.0	14.5	11.0	9.70	9.55	9.35	8.70	7.80	8.12	8.62	8.90
6	9.35	11.0	15.8	10.5	9.70	9.55	9.35	8.70	7.60	8.10	8.65	8.90
7	9.25	10.8	14.7	10.3	9.69	9.40	9.35	8.69	7.50	8.10	8.65	8.92
8	9.25	10.65	13.5	10.3	9.68	9.40	9.35	8.69	7.38	8.20	8.65	8.95
9	9.3	10.55	12.3	10.35	9.68	9.40	9.34	8.68	7.20	8.50	8.68	8.98
10	9.35	10.75	11.85	10.3	9.68	9.40	9.34	8.66	7.00	8.50	8.68	8.98
11	9.55	13.0	11.3	10.25	9.65	9.40	9.33	8.65	.....	8.55	8.68	8.98
12	10.1	12.0	11.0	10.25	9.65	9.40	9.33	8.65	.....	8.55	8.70	8.98
13	10.6	12.85	10.8	10.2	9.65	9.39	9.30	8.65	.....	8.60	8.72	8.95
14	11.0	11.7	10.65	10.15	9.65	9.39	9.30	8.63	.....	8.70	8.72	8.95
15	11.05	11.2	10.55	10.1	9.65	9.39	9.28	8.60	.....	8.68	8.72	8.95
16	10.55	11.05	10.5	10.15	9.65	9.39	9.25	8.60	.....	8.55	8.78	8.95
17	10.4	10.8	10.4	10.05	9.70	9.39	9.25	8.60	.....	8.65	8.80	8.98
18	10.3	10.6	10.35	10.0	9.80	9.39	9.15	8.60	.....	8.65	8.80	8.98
19	10.9	10.6	10.2	10.0	9.80	9.39	9.10	8.55	.....	8.62	8.82	8.95
20	14.1	10.5	10.2	10.0	9.80	9.39	9.05	8.52	.....	8.62	8.82	8.95
21	11.4	10.45	10.2	9.95	9.80	9.38	9.00	8.52	.....	8.62	8.85	8.95
22	10.7	10.45	10.15	9.95	9.75	9.38	8.95	8.52	.....	8.60	8.88	8.95
23	10.55	10.4	10.15	9.95	9.75	9.38	8.93	8.50	.....	8.68	8.88	8.95
24	11.35	10.35	10.1	9.9	9.75	9.38	8.90	8.48	.....	8.58	8.88	8.95
25	11.35	10.3	10.1	9.9	9.70	9.38	8.88	8.48	.....	8.50	8.88	8.98
26	11.4	10.3	10.1	9.8	9.70	9.38	8.85	8.48	.....	8.50	8.88	8.98
27	13.25	10.2	10.05	9.9	9.70	9.38	8.83	8.45	.....	8.50	8.85	8.98
28	15.0	10.2	10.05	9.85	9.65	9.37	8.80	8.45	.....	8.52	8.88	9.00
29	13.0	.....	10.0	9.85	9.65	9.37	8.80	8.42	7.00	8.55	8.88	9.02
30	13.5	.....	9.95	9.8	9.65	9.36	8.80	8.42	8.10	8.55	8.88	9.02
31	12.5	.....	9.95	.....	9.50	.....	8.79	8.35	.....	8.52	.....	9.10

NOTE.—Aug. 29, Mr. Beckett (of the Irrigation Investigations, United States Department of Agriculture) found river dry at gage. There was about 1 second-foot flowing 300 feet above but this sank into the ground before reaching the gage. The water was standing in pools or bed dry Aug. 24 to about Oct. 8 and there was little or no flow past the gage.

EAST FORK OF RUSSIAN RIVER NEAR UKIAH, CAL.

Location.—At suspension footbridge in the Yokayo grant, about three-fourths of a mile above junction with Russian River and 3 miles northeast of Ukiah.

Records available.—August 19 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Staff in two sections on left bank, 40 feet below bridge.

Channel.—Sand and gravel; shifts during high stages.

Discharge measurements.—Made from footbridge above gage and by wading.

Diversions.—The Snow Mountain Water & Power Co. diverts water by a tunnel from the South Eel for use in power development at Potter Valley. This water enters the East Fork about 14 miles above the station. At low stages regulation at the power plant causes a noticeable fluctuation in the discharge. The daily load fluctuates greatly and hence the low-water gage heights are liable to considerable error.

Discharge measurements of East Fork of Russian River near Ukiah, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 19	E. O. Christiansen	4.80	[a]2.0
Nov. 1[b]	do	4.69	4.9
20[c]	Whipple and Stanley	5.04	22

[a] Estimated.
[b] Made by wading 200 feet below gage.
[c] Made by wading by engineers of Irrigation Investigations, United States Department of Agriculture.

Daily gage height, in feet, of East Fork of Russian River near Ukiah, Cal., for 1911.

[E. L. Rich, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	4.70	4.95	5.12	5.15	16	.....	5.08	4.80	5.02	5.35
2	.....	4.85	5.05	5.05	5.10	17	.....	4.90	5.00	4.95	5.38
3	.....	4.70	5.05	5.00	5.10	18	.....	4.95	5.08	4.99	5.41
4	.....	5.02	5.15	5.05	5.10	19	4.70	5.00	5.15	5.00	5.40
5	.....	4.95	5.20	5.10	5.10	20	4.90	4.95	5.15	5.00	5.42
6	.....	4.52	5.08	5.15	5.20	21	4.90	4.90	4.95	4.96	5.40
7	.....	5.00	5.15	5.15	5.20	23	5.30	4.75	4.95	4.95	5.35
8	.....	4.85	4.90	5.12	5.30	23	5.20	4.90	4.98	4.98	5.35
9	.....	4.85	4.90	5.05	5.30	24	4.90	5.00	4.85	5.00	5.40
10	.....	4.90	5.05	5.10	5.25	25	4.20	5.00	4.98	5.01	5.40
11	.....	5.25	5.05	5.15	5.25	26	4.78	4.85	5.10	4.95	5.40
12	.....	5.25	5.20	5.25	5.20	27	5.09	5.00	5.00	4.95	5.44
13	.....	5.10	4.90	5.12	5.25	28	4.90	4.90	5.00	5.00	5.45
14	.....	5.15	4.95	5.15	5.28	29	5.00	4.95	5.05	5.02	5.50
15	.....	4.99	4.85	5.00	5.32	30	4.70	5.10	5.00	5.00	5.50
						31	4.65	.....	5.10	.....	5.51

MATTOLE CREEK BASIN.

MATTOLE CREEK NEAR PETROLIA, CAL.

Location.—At highway bridge in the SW. ¼ sec. 11, T. 2 S., R. 2 W., Humboldt meridian, about 2 miles southeast of Petrolia.

Records available.—November 21 to December 31, 1911.

Drainage area.—264 square miles.

Gage.—Painted on left pier of highway bridge.

Channel.—Sand and gravel; will probably shift during high water.

Discharge measurements.—Made from bridge at gage and by wading.

The following discharge measurement was made by E. O. Christiansen, by wading 150 feet below gage:

November 21, 1911: Gage height, 5.70 feet; discharge, 114 second-feet.

Daily gage height, in feet, of Mattole River near Petrolia, Cal., for 1911.

[Frank Adams, observer.]

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1		5.38	11		5.88	21	5.70	6.04
2		5.35	12		5.79	22	5.65	5.94
3		5.35	13		5.74	23	5.60	6.04
4		5.35	14		5.69	24	5.54	6.02
5		5.54	15		5.64	25	5.50	5.48
6		7.32	16		5.61	26	5.49	5.89
7		6.88	17		5.75	27	5.44	7.20
8		6.39	18		5.54	28	5.42	7.98
9		6.12	19		5.28	29	5.40	7.36
10		5.98	20		6.15	30	5.40	7.09
						31		7.58

EEL RIVER BASIN.

SOUTH EEL RIVER AT HEARST, CAL.

Location.—At highway bridge at Hearst, in the NE. ¼ sec. 20, T. 19 N., R. 12 W., about 3 miles below Sanhedrin Creek. Salt Creek enters 300 feet below gage.

Records available.—December 8, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Painted on downstream caisson of left abutment of bridge with staff in two sections for lower stages.

Channel.—Gravel, with solid rock on left bank. Will shift slightly at high stages.

Discharge measurements.—Made from upstream side of bridge and by wading.

Diversions.—The Snow Mountain Water & Power Co. diverts water for use in power development about 10 miles above the station. This water is discharged into the East Fork of Russian River at Potter Valley.

Estimates are withheld until additional measurements have been made.

Discharge measurements of South Eel River at Hearst, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 3	J. E. Stewart	10.29	471
Aug. 19[a]	E. O. Christiansen	7.10	4.5
Nov. 4[b]	....do	7.09	4.6
19[c]	Whipple and Stanley	7.26	8.7

[a] Made by wading 600 feet below gage. Salt Creek, which enters 300 feet below gage, was dry.
[b] Made by wading ¾ mile above gage.
[c] Made by wading by engineers of Irrigation Investigations, Department of Agriculture.

Daily gage height, in feet, of South Eel River at Hearst, Cal., for 1911.

[C. M. Neighbor, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.95	14.65	10.30	12.70	10.10	9.90	7.50	7.19	7.00	7.02	7.02	7.20
2	7.93	14.85	10.10	12.40	10.25	9.50	7.50	7.17	7.00	7.05	7.02	7.20
3	7.90	14.35	10.30	11.80	10.30	9.40	7.49	7.16	7.00	7.08	7.10	7.20
4	7.90	13.70	12.60	12.40	10.40	9.10	7.48	7.15	7.00	7.02	7.10	7.22
5	7.90	13.15	15.50	16.00	10.65	9.05	7.47	7.20	7.00	7.05	7.10	7.25
6	7.88	12.90	20.30	15.00	10.30	8.90	7.42	7.19	7.00	7.02	7.08	7.22
7	7.86	12.40	20.00	12.80	10.00	9.05	7.41	7.18	7.00	7.02	7.10	7.20
8	7.85	12.20	16.95	12.70	9.92	8.90	7.40	7.18	7.00	7.05	7.10	7.20
9	7.89	11.60	15.80	12.50	9.80	8.80	7.41	7.17	7.00	7.22	7.10	7.25
10	8.10	11.40	13.30	12.35	9.70	8.60	7.39	7.16	7.00	7.22	7.70	7.22

Daily gage height, in feet, of South Eel River at Hearst, Cal., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
11	10.65	13.90	13.20	12.20	9.70	8.52	7.43	7.15	7.00	7.18	7.30	7.25
12	10.22	13.20	12.70	12.10	9.70	8.46	7.35	7.16	7.00	7.12	7.20	7.25
13	10.42	13.70	12.40	11.80	9.65	8.37	7.33	7.16	7.02	7.10	7.20	7.25
14	11.30	12.90	12.30	11.50	9.65	8.10	7.30	7.15	7.02	7.10	7.25	7.25
15	11.06	12.30	12.20	11.40	9.35	8.05	7.31	7.14	7.02	7.10	7.40	7.25
16	10.15	11.90	12.10	11.50	9.40	7.94	7.31	7.12	7.00	7.10	7.25	7.32
17	9.65	11.50	12.30	11.20	9.45	7.87	7.30	7.10	7.00	7.08	7.22	7.50
18	10.40	11.30	12.30	11.10	11.45	7.70	7.30	7.10	7.00	7.08	7.18	7.45
19	18.65	11.80	12.20	11.00	10.70	7.68	7.29	7.11	7.00	7.08	7.18	7.38
20	18.20	11.51	12.35	10.90	10.20	7.65	7.29	7.12	7.00	7.08	7.22	7.35
21	13.70	11.11	12.40	10.80	10.10	7.62	7.29	7.12	7.00	7.08	7.22	7.35
22	12.10	11.10	12.50	10.80	10.10	7.64	7.28	7.15	7.00	7.08	7.22	7.40
23	11.38	11.00	12.30	10.85	10.05	7.62	7.28	7.12	7.00	7.10	7.22	7.38
24	13.52	10.80	12.20	11.40	9.90	7.61	7.26	7.10	7.00	7.05	7.22	7.30
25	13.15	10.80	12.00	11.10	9.50	7.61	7.25	7.10	7.02	7.08	7.22	7.28
26	13.50	10.60	11.90	11.00	9.50	7.60	7.24	7.08	7.02	7.05	7.20	7.30
27	15.80	10.45	11.50	10.80	9.40	7.60	7.23	7.05	7.05	7.02	7.20	7.30
28	16.85	10.45	11.80	10.60	9.30	7.58	7.22	7.05	7.10	7.05	7.20	7.40
29	14.95	.....	11.90	10.20	9.20	7.52	7.24	7.02	7.08	7.05	7.20	7.75
30	17.25	.....	12.50	10.10	9.30	7.50	7.20	7.02	.....	7.02	7.20	7.78
31	16.00	.....	12.60	.....	9.40	.....	7.18	7.02	.....	7.02	.....	7.75

NOTE.—Jan. 19, maximum recorded stage 23.6 feet at 5 p. m.

EEL RIVER NEAR LAYTONVILLE, CAL.

Location.—At highway bridge on Laytonville-Covelo road in the SW. ¼ sec. 31, T. 22 N., R. 13 W., about 500 feet below junction of South and Middle Eel rivers, and about 12 miles east of Laytonville. Burger Creek enters about 1 mile below the station.

Records available.—November 15 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Inclined staff in three sections on right bank at bridge.

Channel.—Solid rock and coarse gravel; appears permanent.

Discharge measurements.—Made from car and cable three-fourths mile below gage and by wading.

Diversions.—The Snow Mountain Water & Power Co. diverts water from the South Eel above Hearst to the East Fork of Russian River for use in power development at Potter Valley.

The following discharge measurement was made by Christiansen and Whipple by wading 800 feet below gage:

November 15, 1911: Gage height, 7.85 feet; discharge, 101 second-feet.

Daily gage height, in feet, of Eel River at Laytonville, Cal., for 1911.

[R. S. Beard, observer.]

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1	.....	7.16	11	.....	7.41	21	7.52	7.72
2	.....	7.15	12	.....	7.40	22	7.50	7.55
3	.....	7.10	13	.....	7.41	23	7.49	7.50
4	.....	7.16	14	.....	7.36	24	7.44	7.62
5	.....	7.20	15	8.80	7.30	25	7.30	7.60
6	.....	7.40	16	9.10	7.40	26	7.30	7.50
7	.....	8.00	17	8.60	8.60	27	7.26	8.40
8	.....	8.00	18	8.25	8.40	28	7.21	9.80
9	.....	7.65	19	7.90	8.08	29	7.20	9.20
10	.....	7.52	20	7.62	7.88	30	7.20	8.95
						31	.....	8.85

EEL RIVER AT SCOTIA, CAL.

Location.—At Wildwood Ferry, in sec. 18, T. 1 N., R. 1 E., Humboldt meridian, about one-half mile northeast of Scotia. Laribee Creek enters about 14 miles above and Van Duzen River 7 miles below the station.

Records available.—December 15, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Staff in four sections, on left bank. The three lower sections are 70 feet above ferry, and upper section is at mouth of Dean Creek, 150 feet farther upstream.

Channel.—Solid rock and gravel; slightly shifting at high stages.

Discharge measurements.—Made from ferryboat and by wading.

Estimates are withheld until additional measurements are available.

Discharge measurements of Eel River at Scotia, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 28	E. O. Christiansen	9.90	128
Sept. 26	do	9.61	78
Nov. 28	do	9.98	201

NOTE.—Measurements made by wading about 1,000 feet below gage at ferry.

Daily gage height, in feet, of Eel River at Scotia, Cal., for 1911.

[Fred Daggett and Cecil Selvage, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.8	20.95	12.6	13.9	12.5	12.2	10.7	.....	.....	9.6	9.6	9.95
2	10.75	20.35	12.5	14.0	12.55	12.3	10.6	.....	.....	9.6	9.6	9.95
3	10.7	20.15	12.5	14.0	12.7	12 25	10.5	.....	.....	9.6	9.6	9.95
4	10.65	18.25	12.7	13.75	12.95	12.2	10.5	.....	.....	9.6	9.6	9.95
5	10.6	17.2	14.1	16.9	12.9	12.05	10.45	.....	.....	9.6	9.6	10.08
6	10.55	16.65	18.55	19.85	12.95	12.0	10.4	.....	.....	9.6	9.6	10.22
7	10.05	15.9	24.3	16.95	12.7	11.9	10.4	.....	.....	9.6	9.6	10.22
8	10.6	15.1	21.8	15.45	12.5	11.9	10.3	.....	.....	9.6	9.6	10.25
9	10.85	14.6	19.1	14.9	12.5	11.7	10.3	.....	.....	9.6	9.6	10.25
10	11.25	14.55	17.25	16.25	12.4	11.7	10.25	.....	.....	9.6	9.98	10.22
11	12.7	16.7	16.15	15.55	12.2	11.7	10.25	.....	.....	9.6	10.22	10.20
12	15.4	16.6	15.35	14.3	12.2	11.6	10.2	.....	.....	9.6	10.22	10.18
13	14.55	17.6	14.8	13.75	12.25	11.55	10.2	.....	.....	9.6	10.25	10.10
14	14.25	17.4	14.4	13.75	12.2	11.5	10.15	.....	.....	9.6	10.38	10 02
15	15.1	16.2	14.15	13.75	12.1	11.7	10.15	.....	.....	9.6	10.45	10.00
16	14.6	15.35	14.0	13.75	12.15	11.6	10.15	.....	.....	9.6	10.60	10.06
17	13.85	14.8	13.9	13 6	12.7	11.55	10.15	.....	.....	9.6	10.68	10.25
18	15.5	14.95	13.9	13.35	14.05	11.4	10.15	.....	.....	9.6	10.78	10.45
19	23.7	14.9	13.9	13.55	14.9	11.3	10.15	.....	.....	9.6	10.52	10.51
20	33.4	14.4	13.8	13.35	13.7	11.25	10.15	.....	.....	9.6	10.42	10.60
21	25.2	14.1	13.85	13.15	13.3	11.2	10.15	.....	.....	9.6	10.22	10.58
22	16.95	13.75	13.8	13.15	13.15	11.2	10.15	.....	.....	9.6	10.10	10.32
23	13.55	13.5	13.8	13.15	13.0	11.15	10.15	.....	.....	9.6	10.50	10.30
24	15.0	13.3	13.9	13.2	13.0	11.0	10.1	.....	9.6	9.6	10.25	10.34
25	16.2	13.2	13.8	13.3	12.75	10.9	10.0	.....	9.6	9.6	9.95	10.30
26	18.3	13.4	13.75	13.4	12.5	10.8	9.92	.....	9.6	9.6	9.95	10.25
27	18.7	12.9	13.5	13.2	12.35	10.8	9.9	.....	9.6	9.6	9.95	10.58
28	24.2	12.75	13.45	12.95	12.35	10.8	.....	9.9	9.6	9.6	9.95	11.60
29	22.15	.....	13.5	12.75	12.15	10.75	.....	.....	9.6	9.6	9.95	11.71
30	23.25	.....	13.5	12.55	12.1	10.7	.....	.....	9.6	9.6	9.95	11.55
31	25.0	.....	13.75	.....	12.1	.....	.....	.....	.....	9.6	.....	11.50

NOTE.—The observer's gage heights July 28 to Sept. 23 are known to be incorrect and are not published. The change in stage was gradual during this period.

MIDDLE EEL RIVER NEAR COVELO, CAL.

Location.—Below highway bridge near Covelo ranger station, in E. ½ sec. 36, T. 23 N., R. 12 W., and about 7 miles east of Covelo. Williams Creek enters about half a mile above the station.

Records available.—August 22 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Inclined staff in two sections on left bank, about one-fourth of a mile west of ranger station and 1 mile below bridge.

Channel.—Small bowlders and gravel, and appears permanent.

Discharge measurements.—Made from downstream side of bridge above gage and by wading. The discharge of Williams Creek is added to give flow at gage.

Cooperation.—Gage-height record furnished by United States Forest Service.

Discharge measurements of Middle Eel River near Covelo, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 22[a]	E. O. Christiansen	7.30	16
Nov. 7[a]	do	7.30	14
12[a]	S. C. Whipple	7.81	39

[a] Made by wading about 400 feet above gage below Williams Creek.

NOTE.—All gage heights are referred to datum of permanent gage installed Nov. 9, 1911. Measurement of Nov. 12 made by an engineer of Irrigation Investigations, Department of Agriculture.

Daily gage height, in feet, of Middle Eel River near Covelo, Cal., for 1911.

[C. V. Brereton, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	7.22	7.30	7.30	7.50	16	.....	7.25	7.32	8.85	7.72
2	.....	7.22	7.29	7.30	7.55	17	.....	7.24	7.30	8.30	7.88
3	.....	7.25	7.30	7.29	7.60	18	.....	7.21	7.30	8.15	7.65
4	.....	7.24	7.30	7.30	7.60	19	.....	7.20	7.28	8.02	7.70
5	.....	7.20	7.31	7.29	7.60	20	.....	7.18	7.28	8.05	7.70
6	.....	7.22	7.20	7.30	7.75	21	.....	7.18	7.28	7.95	7.70
7	.....	7.24	7.28	7.30	8.00	22	7.40	7.20	7.28	7.84	7.70
8	.....	7.22	7.31	.....	7.95	23	7.30	7.20	7.28	7.80	7.70
9	.....	7.22	7.32	7.35	7.85	24	7.22	7.19	7.28	7.74	7.72
10	.....	7.22	7.40	8.25	7.80	25	7.30	7.22	7.26	7.70	7.75
11	.....	7.25	7.40	8.08	7.80	26	7.25	7.22	7.30	7.70	7.78
12	.....	7.25	7.35	7.80	7.70	27	7.28	7.28	7.30	7.68	7.95
13	.....	7.25	7.38	7.72	7.70	28	7.24	7.28	7.30	7.65	8.00
14	.....	7.25	7.35	7.70	7.70	29	7.22	7.31	7.35	7.64	7.85
15	.....	7.25	7.34	8.15	7.65	30	7.21	7.30	7.35	7.60	7.85
						31	7.22	.....	7.31	.....	7.95

NOTE.—All gage heights refer to datum of permanent gage set Nov. 9, 1911.

SOUTH FORK OF EEL RIVER AT GARBERVILLE, CAL.

Location.—At highway bridge in the SW. ¼ sec. 24, T. 4 S., R. 3 E., Humboldt meridian, about 1 mile southwest of Garberville.

Records available.—August 25 to December 31, 1911.

Drainage area.—84 square miles.

Gage.—Chain gage on downstream side of bridge; length of chain 50.93 feet.

Channel.—Bowlders and gravel; will probably shift slightly during high water.

Discharge measurements.—Made from bridge at gage and by wading.

Discharge measurements of South Fork of Eel River at Garberville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 25[a]	E. O. Christiansen	6.75	53
Nov. 18[a]	do	7.36	157

[a] Made by wading 300 feet below bridge.

Daily gage height, in feet, of South Fork of Eel River at Garberville, Cal., for 1911.

[W. L. Hurlbutt, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1		6.7	6.7	6.7	6.80	16		6.7	6.85	7.95	6.92
2		6.7	6.75	6.7	6.78	17		6.7	6.8	7.68	7.42
3		6.7	6.8	6.7	6.78	18		6.7	6.8	7.32	7.64
4		6.7	6.8	6.7	6.80	19		6.7	6.8	7.17	7.52
5		6.7	6.8	6.7	6.86	20		6.65	6.75	7.05	7.36
6		6.7	6.78	6.7	7.25	21		6.65	6.75	6.99	7.24
7		6.7	6.75	6.7	7.47	22		6.65	6.7	6.95	7.20
8		6.7	6.78	6.7	7.42	23		6.65	6.7	6.91	7.16
9		6.7	6.9	6.78	7.18	24		6.65	6.7	6.88	7.17
10		6.7	6.88	7.48	7.06	25	6.75	6.65	6.7	6.88	7.14
11		6.7	6.95	7.70	7.00	26	6.75	6.65	6.7	6.86	7.08
12		6.7	6.9	7.25	6.96	27	6.75	6.7	6.7	6.86	7.68
13		6.7	6.85	7.15	6.94	28	6.75	6.7	6.7	6.82	9.45
14		6.7	6.88	7.18	6.90	29	6.75	6.7	6.7	6.80	8.69
15		6.7	6.9	7.40	6.90	30	6.75	6.7	6.7	6.80	8.30
						31	6.72		6.7		8.46

VAN DUZEN RIVER AT BRIDGEVILLE, CAL.

Location.—Just below highway bridge at Bridgeville, in the NW. ¼ sec. 13, T. 1 N., R. 3 E., Humboldt meridian.

Records available.—September 22 to December 31, 1911.

Drainage area.—194 square miles.

Gage.—Staff in two sections on right bank just below bridge.

Channel.—Gravel; will probably shift during high water.

Discharge measurements.—Made from car and cable 90 feet below gage and by wading.

Discharge measurements of Van Duzen River at Bridgeville, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 22[a]	E. O. Christiansen	4.50	6.9
Oct. 19[b]	do	4.71	12

[a] Made by wading 300 feet above gage. [b] Made by wading 500 feet above gage.

Daily gage height, in feet, of Van Duzen River at Bridgeville, Cal., for 1911.

[M. Lue Ballard, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1		4.59	4.64	4.90	16		4.78	6.50	5.50
2		4.60	4.65	4.90	17		4.77	6.05	5.60
3		4.62	4.66	4.89	18		4.74	5.62	5.56
4		4.66	4.65	4.88	19		4.70	5.48	5.62
5		4.66	4.63	5.12	20		4.69	5.32	5.65
6		4.64	4.65	5.46	21		4.65	5.25	5.55
7		4.61	4.67	5.80	22	4.51	4.65	5.16	5.62
8		4.62	4.72	5.47	23	4.51	4.65	5.05	5.68
9		4.81	5.12	5.36	24	4.51	4.66	5.04	5.72
10		4.88	5.65	5.24	25	4.51	4.68	5.01	5.62
11		4.81	5.61	5.18	26	4.53	4.69	4.96	5.60
12		4.79	5.61	5.06	27	4.59	4.67	4.91	6.40
13		4.75	5.46	4.92	28	4.59	4.65	4.91	6.20
14		4.82	5.48	5.05	29	4.59	4.65	4.90	6.00
15		4.88	6.30	5.25	30	4.59	4.66	4.90	5.95
					31		4.68		6.00

YAGER CREEK AT CARLOTTA, CAL.

Location.—At highway bridge at Carlotta, in sec. 28, T. 2 N., R. 1 E., Humboldt meridian, about half a mile above junction with Van Duzen River.

Records available.—August 29 to December 31, 1911.

Drainage area.—146 square miles.

Gage.—Vertical staff fastened to left abutment of bridge.

Channel.—Gravel and sand; may shift slightly at high stages.

Discharge measurements.—Made from railroad bridge 40 feet below gage and by wading.

Discharge measurements of Yager Creek at Carlotta, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 29	E. O. Christiansen	5.57	[a] 0.5
Sept. 23	do	5.55	*a*. 2
Oct. 20[b]	do	5.61	1.2

[a] Estimated. [b] Made by wading 350 feet below gage.

Daily gage height, in feet, of Yager Creek at Carlotta, Cal., for 1911.

[Fred. E. Scribner and H. V. Bianchi, observers.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1		5.55	5.6	5.6	5.6	16		5.55	5.6	7.0	5.6
2		5.55	5.6	5.6	5.6	17		5.55	5.6	6.5	6.5
3		5.55	5.6	5.6	5.6	18		5.55	5.6	6.2	6.5
4		5.55	5.6	5.6	5.6	19		5.55	5.6	5.9	6.3
5		5.55	5.6	5.6	5.6	20		5.55	5.6	5.8	6.7
6		5.55	5.6	5.6	5.7	21		5.55	5.6	5.7	6.3
7		5.55	5.6	5.6	6.15	22		5.55	5.6	5.6	6.25
8		5.55	5.6	5.6	5.9	23		5.56	5.6	5.6	6.35
9		5.55	5.6	5.6	5.65	24		5.58	5.6	5.6	6.75
10		5.55	5.6	5.8	5.6	25		5.58	5.6	5.6	6.45
11		5.55	5.6	6.4	5.6	26		5.60	5.6	5.6	6.4
12		5.55	5.6	5.95	5.6	27		5.60	5.6	5.6	7.0
13		5.55	5.6	5.65	5.6	28		5.60	5.6	5.6	7.75
14		5.55	5.6	6.05	5.6	29	5.56	5.60	5.6	5.6	7.0
15		5.55	5.6	6.0	5.6	30	5.55	5.60	5.6	5.6	6.8
						31	5.55		5.6		7.5

MAD RIVER BASIN.

MAD RIVER NEAR ARCATA, CAL.

Location.—At the Oregon & Eureka Railroad bridge at Essex, in sec. 15, T. 6 N., R. 1 E., Humboldt meridian, 1 mile below Warren Creek, and about 5 miles northeast of Arcata.

Records available.—December 29, 1910, to December 31, 1911.

Drainage area.—452 square miles.

Gage.—Vertical staff in two sections on right bank at railroad bridge.

Channel.—Sand and gravel; slightly shifting at high stages.

Discharge measurements.—Made from highway bridge just above gage and by wading.

Estimates are withheld until additional measurements are available.

Discharge measurements of Mad River near Arcata, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug 30[a]	E. O. Christiansen	11.84	29
Sept. 25[b]	do	11.79	21

[a] Made by wading 500 feet above gage. [b] Made by wading above bridge.

Daily gage height, in feet, of Mad River near Arcata, Cal., for 1911.

[Ernest McCloskey, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	12.9	17.9	13.9	14.6	13.4	13.3	12.35	11.95	11.85	11.8	11.80	12.00
2	12.8	17.8	13.95	14.6	13.5	13.3	12.3	11.95	11.85	11.8	11.80	12.08
3	12.7	18.0	13.85	14.1	13.55	13.2	12.3	11.9	11.85	11.8	11.80	12.08
4	12.7	17.1	14.2	14.1	13.45	13.15	12.3	11.9	11.85	11.8	11.80	12.08
5	12.65	16.1	14.4	19.0	14.15	13.05	12.3	11.9	11.8	11.8	11.80	12.05
6	12.6	16.6	15.25	17.1	13.8	13.0	12.25	11.9	11.8	11.8	11.80	12.05
7	12.55	16.15	17.55	15.95	13.9	13.0	12.2	11.9	11.8	11.82	11.80	12.30
8	12.55	15.5	17.3	15.5	14.0	12.95	12.2	11.9	11.8	11.85	11.82	12.25
9	13.2	15.25	16.2	15.6	14.4	12.95	12.2	11.9	11.8	11.85	11.85	12.20
10	14.6	15.1	15.95	16.2	14.1	12.9	12.2	11.9	11.8	11.85	12.40	12.18
11	17.2	16.55	15.5	16.75	13.95	12.8	12.15	11.9	11.8	11.85	12.40	12.15
12	15.35	16.35	15.3	16.2	13.75	12.7	12.15	11.9	11.8	11.85	12.25	12.10
13	15.15	16.3	15.15	15.7	13.6	12.7	12.1	11.9	11.8	11.85	12.18	12.08
14	14.75	15.85	15.05	15.45	13.5	12.7	12.1	11.9	11.8	11.88	12.10	12.08
15	14.65	15.55	15.0	15.1	13.45	12.65	12.05	11.9	11.8	11.85	13.12	12.05
16	14.5	15.1	15.0	15.0	13.7	12.6	12.05	11.9	11.8	11.85	13.55	12.10
17	14.45	15.05	15.05	14.9	14.6	12.6	12.05	11.85	11.8	11.85	13.00	12.74
18	14.55	15.85	15.1	14.7	18.1	12.6	12.05	11.85	11.8	11.85	12.70	12.75
19	22.0	15.5	15.1	14.5	16.4	12.55	12.0	11.85	11.8	11.85	12.35	12.60
20	20.8	15.3	15.1	14.3	15.55	12.55	12.0	11.85	11.8	11.85	12.30	12.58
21	18.0	15.0	15.15	14.15	15.1	12.5	12.0	11.85	11.8	11.85	12.20	12.55
22	16.5	14.8	15.05	14.1	14.7	12.5	12.0	11.85	11.8	11.85	12.20	12.48
23	15.85	14.6	15.25	14.0	14.6	12.5	12.0	11.85	11.8	11.82	12.18	12.50
24	15.7	14.5	15.15	13.9	14.2	12.45	12.0	11.85	11.8	11.82	12.10	12.52
25	16.0	14.45	14.9	13.85	13.95	12.45	12.0	11.85	11.8	11.82	12.08	12.58
26	16.8	14.2	14.7	13.8	13.8	12.4	12.0	11.85	11.8	11.82	12.02	12.60
27	16.75	14.2	14.5	13.75	13.65	12.4	12.0	11.85	11.8	11.82	12.00	13.29
28	16.6	14.05	14.2	13.6	13.5	12.4	11.95	11.85	11.8	11.82	12.00	14.60
29	16.3	.....	14.25	13.5	13.45	12.4	11.95	11.85	11.8	11.82	12.00	13.60
30	19.75	.....	14.7	13.45	13.4	12.35	11.95	11.85	11.8	11.82	12.00	13.40
31	19.3	.....	14.65	.....	13.3	.....	11.95	11.85	.....	11.82	.....	14.05

REDWOOD CREEK BASIN.

REDWOOD CREEK NEAR KORBEL, CAL.

Location.—At highway bridge at Bair's ranch, in the SE. ¼ sec. 28, T. 7 N., R. 3 E., Humboldt meridian, 200 feet above Minor Creek and about 9 miles northeast of Korbel.

Records available.—September 4 to December 31, 1911.

Drainage area.—81 square miles.

Gage.—Temporary staff gage located just above mouth of Minor Creek used September 4 to October 14, when permanent chain gage was installed on downstream side of bridge to same datum as staff gage. Length of chain, 35.10 feet.

Channel.—Sand and gravel; will probably shift slightly at high stages.

Discharge measurements.—Made from bridge at gage and by wading.

Discharge measurements of Redwood Creek near Korbel, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 4	E. O. Christiansen	5.25	*a*2
Oct. 14[b]	do	5.75	14
Dec. 28[c]	do	6.88	151

a Estimated. *b* Made by wading 100 feet above gage. *c* Made by wading 20 feet below gage.

Daily gage height, in feet, of Redwood Creek near Korbel, Cal., for 1911.

[John Johnson, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	5.32	5.30	5.65	16	5.30	5.48	6.80	5.94
2	.....	5.36	5.30	5.65	17	5.30	5.45	6.40	6.44
3	.....	5.50	5.30	5.65	18	5.30	5.41	6.12	6.12
4	5.28	5.70	5.30	5.65	19	5.30	5.42	6.00	6.08
5	5.31	5.62	5.32	5.68	20	5.29	5.42	5.90	6.15
6	5.32	5.54	5.34	5.80	21	5.25	5.45	5.86	6.01
7	5.35	5.50	5.35	6.00	22	5.25	5.55	5.80	5.95
8	5.34	5.60	5.48	5.88	23	5.25	5.45	5.76	6.20
9	5.32	5.84	5.95	5.80	24	5.25	5.45	5.75	6.22
10	5.30	5.49	6.35	5.76	25	5.30	5.42	5.70	6.16
11	5.30	5.40	5.65	5.75	26	5.35	5.42	5.70	6.10
12	5.30	5.38	5.52	5.70	27	5.35	5.30	5.70	7.02
13	5.30	5.48	6.20	5.70	28	5.35	5.30	5.70	6.88
14	5.30	5.65	6.00	5.68	29	5.35	5.30	5.68	5.50
15	5.30	5.61	7.30	5.72	30	5.32	5.30	5.65	6.38
					31	.....	5.30	.....	6.82

NOTE.—Possibly slight error in gage heights Sept. 4 to Oct. 14 due to slope of water surface between the two gage sites (see description).

REDWOOD CREEK AT ORICK, CAL.

Location.—At highway bridge at Orick, in the NE. ¼ sec. 4, T. 10 N., R. 1 E., Humboldt meridian, about 1½ miles above mouth.

Records available.—September 10 to December 31, 1911.

Drainage area.—262 square miles.

Gage.—Chain gage on upstream side of bridge near left bank. Length of chain, 33.01 feet.

Channel.—Gravel and sand; may shift slightly at high stages.

Discharge measurements.—Made from highway bridge and by wading.

Discharge measurements of Redwood Creek at Orick, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 10[a]	E. O. Christiansen	5.21	19
Dec. 17[b]	do	6.75	432

[a] Made by wading at gage. [b] Made by wading 150 feet below gage.

Daily gage height, in feet, of Redwood Creek at Orick, Cal., for 1911.

[R. F. Gruber, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	5.16	5.15	5.28	16	5.18	5.49	6.62	5.80
2	.....	5.15	5.14	5.22	17	5.16	5.46	6.25	6.02
3	.....	5.14	5.12	5.20	18	5.15	5.44	6.00	6.05
4	.....	5.12	5.12	5.28	19	5.14	5.41	5.60	5.70
5	.....	5.19	5.12	5.45	20	5.12	5.36	5.25	5.50
6	.....	5.28	5.16	5.52	21	5.11	5.28	5.45	5.38
7	.....	5.35	5.22	5.48	22	5.10	5.22	5.65	5.30
8	.....	5.40	5.32	5.38	23	5.10	5.22	5.62	5.36
9	.....	5.42	5.75	5.32	24	5.10	5.20	5.59	5.45
10	5.20	5.45	6.52	5.25	25	5.14	5.18	5.56	5.55
11	5.20	5.45	6.48	5.20	26	5.20	5.18	5.52	5.85
12	5.20	5.48	6.40	5.20	27	5.20	5.18	5.50	6.55
13	5.20	5.48	6.35	5.35	28	5.20	5.16	5.48	7.25
14	5.20	5.50	6.45	5.52	29	5.19	5.15	5.39	7.55
15	5.20	5.50	6.58	5.61	30	5.18	5.15	5.32	7.75
					31	.....	5.15	.....	8.10

KLAMATH RIVER BASIN.

SPRAGUE RIVER AT CHILOQUIN, OREG.

Location.—In sec. 3, T. 35 S., R. 7 E., at the Southern Pacific Railroad bridge at Chiloquin, 200 feet above the junction of Sprague and Williamson rivers.

Records available.—July 25, 1911, to December 31, 1911.

Gage.—Chain gage on railroad bridge.

Channel.—Rocky and probably permanent in main channel. The overflow channel is piled up with gravel and may shift in floods.

Accuracy.—Conditions are fair and good results should be obtained.

Diversions.—Above the forks of Sprague River there is a considerable amount of diversion for irrigation. At present there are no diversions below the forks, but a canal is being built to divert water a short distance above this station.

Cooperation.—This station is maintained by the United States Reclamation Service and the records are worked up and published by the Survey.

Discharge measurements of Sprague River at Chiloquin, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
July 25	L. Moser	1.00	513
Aug 28	R. W. Davenport	.98	428
Nov. 21	W. O. Harmon	1.22	424

Daily gage height, in feet, of Sprague River at Chiloquin, Oreg., for 1911.

[Alfred Gentry, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.0	1.0	1.1	1.1	1.2	16	1.0	1.0	1.1	1.2	1.2
2	1.0	1.0	1.1	1.1	1.2	17	1.0	1.0	1.1	1.2	1.2
3	1.0	1.0	1.1	1.1	1.2	18	1.0	1.0	1.1	1.2	1.2
4	1.0	1.0	1.1	1.1	1.2	19	1.0	1.0	1.1	1.2	1.2
5	1.0	1.0	1.1	1.1	1.2	20	1.0	1.0	1.1	1.2	1.2
6	1.0	1.0	1.1	1.1	1.2	21	1.0	1.0	1.1	1.2	1.2
7	1.0	1.0	1.1	1.1	1.2	22	1.0	1.0	1.1	1.2	1.2
8	1.0	1.0	1.1	1.1	1.2	23	1.0	1.0	1.1	1.2	1.2
9	1.0	1.0	1.1	1.1	1.2	24	1.0	1.0	1.1	1.2	1.2
10	1.0	1.0	1.1	1.1	1.2	25	1.0	1.0	1.1	1.2	1.2
11	1.0	1.0	1.1	1.2	1.2	26	1.0	1.0	1.1	1.2	1.2
12	1.0	1.0	1.1	1.2	1.2	27	1.0	1.0	1.1	1.2	1.1
13	1.0	1.0	1.1	1.2	1.2	28	1.0	1.1	1.1	1.2	1.1
14	1.0	1.0	1.1	1.2	1.2	29	1.0	1.1	1.1	1.2	1.1
15	1.0	1.0	1.1	1.2	1.2	30	1.0	1.1	1.1	1.2	1.1
						31	1.0	.....	1.1	.....	1.1

UPPER KLAMATH LAKE NEAR KLAMATH FALLS, OREG.

Location.—In sec. 30, T. 38 S., R. 9 E., near Klamath Falls, Oreg.

Records available.—May 28, 1904, to December 31, 1911.

Drainage area.—3,110 square miles, at the outlet of lake.

Gage.—Friez automatic, installed February 16, 1906; referred to level of a staff gage installed May 28, 1904. Elevation of zero of staff gage 4,136.13 feet above sea level. Gage heights since February 16, 1906, are the means of the daily records obtained from the automatic gage.

Diversions.—Water is diverted from the lake to the main canal of the Klamath project of the United States Reclamation Service.

Fluctuations of lake level.—The level of the water surface of Klamath Lake is strongly affected by wind. When the wind blows from the south the water may be lowered as much as 6 inches near the outlet; when the wind is from the north the water surface may be raised 6 inches above its normal level; differences of a foot may be noticed within a few hours. If the effect of wind were eliminated, the record of lake heights would show much more gradual changes than are indicated by the following tables.

Cooperation.—Station maintained by the United States Reclamation Service since May, 1909.

Daily gage height, in feet, of Upper Klamath Lake near Klamath Falls, Oreg., for 1911.

[Jas. Newnham and Graham Kiehl, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.60	5.50	5.58	6.28	6.53	5.97	5.40	5.07	4.87	4.49	4.63	4.84
2	5.60	5.50	5.57	6.30	6.56	6.00	5.31	5.04	4.88	4.53	4.63	4.84
3	5.60	5.50	5.56	6.30	6.50	6.00	5.34	5.02	4.88	4.48	4.63	4.85
4	5.60	5.50	5.55	6.26	6.28	6.02	5.37	5.01	4.86	4.48	4.69	4.85
5	5.60	5150	5.54	6.23	6.57	5.95	5.33	5.02	4.82	.....	.....	4.83
6	5.60	5.50	5.54	6.42	6.52	5.93	3.35	5.01	4.70	.....	.....	4.95
7	5.60	5.53	5.48	6.44	6.50	5.85	5.38	5.01	4.67	[a] 4.45	.....	5.02
8	5.53	5.53	5.49	6.56	6.40	5.90	5.41	5.01	4.62	4.33	.....	4.98
9	5.51	5.53	5.49	6.35	.....	5.85	5.27	5.08	4.63	4.47	.....	4.98
10	5.51	5.53	5.50	6.40	.....	5.83	5.30	5.00	4.60	4.53	.....	4.98
11	5.52	5.54	5.50	6.45	.....	5.80	5.28	5.01	4.61	4.52	[a] 4.75	4.96
12	5.55	5.54	5.51	6.55	.....	5.82	5.23	5.00	6.64	4.50	.....	4.96
13	5.52	5.55	5.51	6.55	.....	5.88	5.23	5.00	4.83	4.37	.....	4.93
14	5.52	5.56	5.52	6.50	6.55	5.87	5.20	5.00	4.87	4.51	.....	4.90
15	5.52	5.56	5.52	6.55	6.45	5.86	5918	4.99	4.91	4.62	.....	4.89
16	5.52	5.57	5.53	.....	6.40	5.84	5.15	5.00	4.97	4.60	.....	4.86
17	5.51	5.57	5.55	.....	6.38	5.82	5.15	5.00	.....	4.60	.....	4.87
18	5.51	5.57	5.55	.....	.....	5.75	5.09	5.00	.....	4.64	[a] 4.80	4.86
19	5.50	5.57	5.56	6.95	.....	5.71	5.10	5.00	.....	.....	4.80	4.86
20	5.50	5.57	5.57	6.92	.....	5.70	.....	5.00	.....	.....	4.80	4.99
21	5.50	5.57	5.58	6.86	6.43	5.55	.....	4.99	4.35	[a] 4.60	4.84	5.00
22	5.50	5.58	5.60	6.90	6.32	5.58	[a] 5.00	4.98	4.41	.....	4.82	5.00
23	5.50	5.59	5.68	[a] 6.80	6.32	5.57	5.03	4.93	4.41	.....	4.81	5.00
24	5.50	5.59	5.77	[a] 6.78	6.35	5.48	5.00	4.93	4.39	.....	4.81	5.00
25	5.50	5.59	5.88	[a] 6.75	6.30	5.46	5.03	4.91	4.35	.....	4.81	5.00
26	5.50	5.59	5.90	[a] 6.70	6.20	5.45	5.18	4.89	4.35	.....	4.81	5.00
27	5.50	5.58	5.94	[a] 6.70	6.15	5.50	5.03	4.89	4.39	.....	4.82	5.00
28	5.50	5.58	6.04	[a] 6.70	6.12	5.49	4.99	4.89	.....	[a] 4.50	4.83	5.00
29	5.50	.....	6.09	[a] 6.65	6.13	5.51	5.00	4.89	.....	4.55	4.83	4.99
30	5.50	.....	6.15	6.55	6.12	5.48	5.00	4.88	[a] 4.40	4.54	4.83	4.99
31	5.50	.....	6.21	.....	5.95	.....	5.02	4.82	.....	4.60	.....	4.99

[a] Friez gage out of order, daily gage heights from one reading of staff gage.

NOTE.—Daily gage height is mean for 24 hours ending at noon, except as noted. Due to inaccuracies of the automatic gage these values may be in error several hundredths of a foot and during the month of September four or five tenths of a foot, but the figures given are believed to be the most nearly correct obtainable after a careful study of the automatic gage sheets and the observer's readings on the staff gage. The lake was frozen at the gage Jan. 1 to Mar. 7 and probably Dec. 18 to 31.

LINK RIVER AT KLAMATH FALLS, OREG.

Location.—At the county bridge over Link River at Klamath Falls in sec. 32, T. 38 S., R. 9 E., 1¼ miles below the outlet of Upper Klamath Lake and at the immediate head of Lake Ewauna.

Records available.—May 15, 1904, to December 31, 1911.

Drainage area.—3,110 square miles.

Gages.—Chain gage at the bridge and Friez automatic gage in rapids above bridge. The chain gage was removed July 12, 1912, on account of reconstruction of the bridge, and reinstalled August 20, 1912, at an arbitrary datum.

Channel.—Permanent at both gages; current swift at upper gage, sluggish at lower gage. In the 1¼ miles between Upper Klamath Lake and Lake Ewauna the river falls 70 feet.

Discharge measurements.—Made at the bridge.

Diversions.—Water is diverted in the Keno Canal around the Friez gage. Part of this is used to supply the power plant operated by Moore Bros., and the remainder is wasted at a spillway. Both power plant and spillway are located above the bridge and below the Friez gage. All the water therefore passes the bridge gage and is included in the measurements but does not pass the Friez gage. There is no record of amount diverted except a few miscellaneous measurements which do not include water wasted from spillway.

Accuracy.—The records prior to June 6, 1908, especially the individual daily records are not reliable. For longer periods—a month or more—the determination of mean flow can probably be accepted as not greatly in error. This condition is accounted for by the effect of wind on the discharge at this station. The gage until May 8, 1908, was located at the bridge at the upper end of Lake Ewauna. At the outlet of Upper Klamath Lake the river breaks over a rather shallow ledge. A strong wind upstream blows the water back from this outlet and at the same time increases the height of water on the gage by backing the water in Lake Ewauna. Thus we have diminished flow with increased gage height. So great is this wind effect that the river has been known to go entirely dry for a few hours at a time. When the wind is downstream the flow of Link River is greatly increased; but owing to the large surface of Lake Ewauna this increase in flow is not shown by the gage heights. In the long run these wind effects are no doubt compensating, but little dependence can be placed in the published daily records prior to March 7, 1907. On this date an anemometer was installed on the bridge and a ship's taffrail log was trailed in the water under the bridge. It was hoped that the daily reading from this log would afford some indication of the velocities with the anemometer records. Although the records obtained by this device were much more reliable during 1907 than previously, even they were not all that could be desired. It became evident that owing to the sudden changes of the wind complete data could not be obtained without automatic recording devices on both the log and anemometer. The method was effective, however, in reducing the probable error of the estimates from about 15 per cent to within less than 5 per cent. On June 6, 1908, a Friez gage was installed in the rapids, where it could be affected only by change in flow, measurements being made at the bridge as formerly. In addition to this the automatic gage was damaged by logs, and its readings at times affected by log jams. As a result the records published for 1910 and the last part of 1909 are subject to considerable uncertainty and no discharges can be computed for 1911.

Cooperation.—This station has been maintained by the United States Reclamation Service since May, 1909.

Discharge measurements of Link River at Klamath Falls, Oreg., in 1910–11.

Date.	Hydrographer.	Chain gage.	Friez gage.	Discharge.
1910.		*Feet.*	*Feet.*	*Sec.-ft.*
Mar. 17	John Yadon	5.08	3.20	4,520
July 29	do	2.90	[a]1.10	1,180
Aug. 25	L. Moser	2.57	[a].82	1,160
Dec. 12	do	3.90	[a]2.30	3,320
18	do	4.12	[a]2.48	3,640
28	do	4.15	[a]2.29	3,240
1911.				
Jan. 7	L. Moser	4.12	2.14	3,010
June 1	do	4.88	2.55	3,830
20	do	4.40	2.22	2,970
July 1	do	4.18	1.83	2,290
Aug. 27	do	2.69	1.09	1,280
Nov. 21	do	3.05	1.50	1,920

[a] Automatic gage not read at time of measurement; gage height is the mean for the day

Discharge measurements of Moore Bros.' flume near Klamath Falls, Oreg., in 1910–1912.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1910.	*Feet.*	*Sec.-ft.*	1911.	*Feet.*	*Sec.-ft.*
June 9	2.41	133	Nov. 22	1.52	213
13	2.60	130	24	1.49	200
1911.			27	1.56	200
July 28	1.37	135	1912.		
Sept. 25	.98	214	Jan. 30	(a)	194
26	1.00	210			

a Automatic gage not working.

NOTE.—Gage heights refer to automatic gage on Link River and are the mean daily records.

Daily gage height, in feet, of Link River at Klamath Falls, Oreg., for 1911.

[Friez automatic gage.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.28	1.95	1.66	3.15	3.48	.....	2.20	1.57	.....	.....	1.16	.....
2	2.25	1.94	1.62	3.18	3.63	.....	2.20	1.53	.....	.....	1.16	1.58
3	2.22	1.64	1.61	3.09	3.40	.....	2.21	1.53	0.99	1.21	1.16	1.65
4	2.20	1.47	1.72	.....	2.72	.....	2.21	1.70	1.15	1.30	1.12	.....
5	2.19	1.48	1.72	.....	2.90	.....	.....	1.62	1.09	1.22	1.10	.....
6	2.18	1.49	1.73	.....	.....	.....	.....	.....	.98	1.22	1.08	.....
7	2.16	1.49	1.77	.....	.....	.....	.....	.....	1.02	1.10	1.10	.....
8	2.15	1.49	1.55	.....	3.05	.....	1.80	.....	1.01	.....	1.13	.....
9	2.14	1.55	1.50	.....	3.08	.....	1.80	.....	1.05	1.25	.....	1.38
10	2.14	1.61	1.50	.....	3.06	.....	1.90	.....	.....	1.24	.....	1.37
11	2.18	1.70	1.51	.....	3.13	.....	1.90	1.20	.89	1.22	1.28	1.40
12	2.18	1.71	1.50	.....	3.10	.....	.....	.....	.89	1.20	1.20	1.39
13	2.16	1.71	1.85	.....	3.15	.....	.....	.....	1.02	.....	1.18	1.38
14	2.14	1.71	1.90	.....	3.15	.....	.....	1.20	.98	.....	1.31	1.38
15	2.15	1.70	2.15	.....	3.05	.....	.....	1.18	.95	1.12	1.62	1.38
16	.....	1.70	2.40	.....	2.98	.....	.....	1.15	1.03	1.05	1.50	1.38
17	.....	1.70	2.45	.....	2.96	.....	.....	1.18	.....	1.13	.....	1.37
18	.....	1.70	.....	.....	.....	.....	.....	1.16	.....	1.18	1.50	1.35
19	.....	1.70	.....	.....	2.89	2.50	.....	1.18	.....	1.12	1.51	1.36
20	.....	1.70	.....	.....	2.93	2.35	.....	1.13	.....	1.10	1.65	1.34
21	2.10	1.70	.....	.....	3.05	2.25	.....	1.13	.....	1.00	1.52	1.33
22	2.10	1.68	.....	.....	3.12	2.32	1.60	1.02	.....	1.03	1.49	1.33
23	2.09	1.67	.....	.....	3.05	2.31	1.45	1.05	.....	1.02	1.49	.....
24	2.05	1.67	.....	.....	3.05	2.24	1.05	.99	.....	1.10	1.50	.....
25	2.07	1.68	3.00	.....	.....	2.21	1.30	.97	.....	1.30	1.54	.....
26	2.06	1.71	3.05	.....	.....	2.38	1.25	1.09	1.04	1.20	1.56	.....
27	2.05	1.70	3.10	.....	.....	2.42	1.29	1.01	1.08	1.05	.....	.....
28	2.07	1.69	3.18	.....	.....	2.48	1.37	1.03	1.06	1.10	.....	.....
29	1.96	.....	3.25	3.65	.....	2.37	1.39	1.01	1.10	1.06	.....	.....
30	1.96	.....	3.30	3.50	.....	2.25	1.45	.98	.....	1.12	.....	.....
31	1.94	.....	3.35	.....	.....	.....	1.57	1.10	.....	1.18	.....	.....

NOTE.—Accuracy of automatic-gage record doubtful July 8–15 account of logs on the riffle below. Aug. 6–10 and Oct. 8 gage heights known to be affected by backwater from log jams.

Daily gage height, in feet, of Link River at Klamath Falls, Oreg., for 1911.

[Gage at bridge. Harold Sargeant, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.16	4.20	4.00	4.17	5.05	4.85	4.10	.....	2.70	2.68	2.85	3.08
2	4.15	4.25	3.99	4.10	5.07	4.82	4.10	.....	2.70	2.70	2.86	3.08
3	4.15	4.11	4.05	4.25	5.00	4.79	4.09	.....	2.65	2.74	2.85	3.08
4	4.13	4.05	4.00	4.30	5.02	4.79	4.03	.....	2.65	2.75	2.86	3.08
5	4.11	4.05	4.05	4.00	5.05	4.83	4.00	.....	2.65	2.74	2.89	3.08
6	4.10	4.00	4.17	4.35	5.10	4.69	4.01	.....	2.63	2.74	2.88	3.09
7	4.15	4.02	4.15	4.35	5.10	4.70	4.00	.....	2.65	2.74	2.90	3.08
8	4.10	4.00	3.99	4.57	5.07	4.69	3.97	.....	2.65	2.74	2.91	3.07
9	4.25	4.00	4.00	4.65	5.02	4.68	3.94	.....	2.65	2.74	2.90	3.09
10	4.26	4.15	3.96	4.60	5.07	4.60	3.89	.....	2.65	2.74	2.89	3.10
11	4.23	4.18	3.95	4.70	5.05	4.60	3.85	.....	2.65	2.74	2.90	3.08
12	4.25	4.17	3.95	4.73	5.05	4.61	.....	.....	2.60	2.74	2.91	3.07
13	4.23	4.10	3.95	4.70	5.02	4.60	.....	.....	2.62	2.73	2.92	3.08
14	4.20	4.10	3.95	4.65	5.05	4.56	.....	.....	2.62	2.94	2.93	3.08
15	4.25	4.05	4.05	4.70	5.05	4.56	.....	.....	2.62	2.74	.....	3.09
16	4.20	4.10	4.00	4.70	5.15	4.51	.....	.....	2.60	2.73	.....	3.09
17	4.30	4.06	4.05	4.87	5.05	4.47	.....	.....	2.60	2.74	.....	3.11
18	4.35	4.10	4.01	4.85	5.20	4.43	.....	.....	2.57	2.74	.....	3.12
19	4.25	4.05	4.05	4.90	5.02	4.47	.....	.....	2.59	2.75	.....	3.13
20	4.25	4.16	4.05	4.91	4.95	4.43	.....	2.72	2.62	2.79	.....	3.16
21	4.27	4.05	4.05	4.90	4.95	4.37	.....	2.73	2.62	2.80	.....	3.18
22	4.27	4.02	4.08	4.50	4.94	4.36	.....	2.70	2.62	2.80	.....	3.20
23	4.32	3.95	4.10	4.85	5.00	4.34	.....	2.70	2.62	2.81	.....	3.23
24	4.30	4.01	4.05	4.80	4.93	4.33	.....	2.70	2.62	2.80	.....	3.25
25	4.35	3.90	4.05	4.85	4.92	4.33	.....	2.70	2.60	2.79	3.08	3.24
26	4.38	3.95	4.09	5.02	4.87	4.27	.....	2.75	2.62	2.80	3.09	3.25
27	4.40	3.90	4.05	5.05	4.87	4.23	.....	2.70	2.62	2.81	3.10	3.23
28	4.27	3.95	4.05	5.01	4.92	4.24	.....	2.70	2.65	2.81	3.09	.....
29	4.35	.....	4.07	5.00	4.90	4.20	.....	2.70	2.65	2.82	3.08	.....
30	4.20	.....	4.10	5.05	4.87	4.15	.....	2.70	2.67	2.84	3.09	.....
31	4.20	.....	4.15	.....	4.87	.....	.....	2.70	.....	2.85	.....	.....

KLAMATH RIVER AT KENO, OREG.

Location.—At the county bridge over Klamath River at the lower end of the lakes and marshes that form the headwaters of the river, in sec. 31, T. 39 S., R. 8 E.

Records available.—May 31, 1904, to December 31, 1911.

Drainage area.—3,150 square miles (excluding lower Klamath Lake drainage area).

Gage.—Vertical staff nailed to bridge; datum unchanged.

Channel.—Immediately below the station the river breaks over a rocky ledge with a fall of about 200 feet to the mile. At low stages a growth of aquatic plants clogs the channel.

Discharge measurements.—Made from a cable 1,000 feet below the gage. No measurements made during 1911.

Winter flow.—River usually freezes over, but as the water is comparatively deep and the ice is not very thick the relation between gage height and discharge is not greatly affected.

Accuracy.—Relation of gage height to discharge affected by back water caused by a growth of aquatic plants in the section and also by the effect of wind on the wide expanse of water above the station. A strong upstream wind will blow the water back from the outlet and diminish the flow, but as the gage is 1,000 feet above the measuring section the gage heights are not always affected to a corresponding degree. On account of lack of measurements no estimates are attempted for 1911.

Cooperation.—This station has been maintained by the United States Reclamation Service since May, 1909.

Daily gage height, in feet, of Klamath River at Keno, Oreg., for 1911.

[H. Snowgoose, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	13.0	13 2	12.9	13.0	13.5	13.6	13.1	12.35	11.95	11.95	12.15	12.35
2	13.0	13.2	12.9	13.0	13.5	13.6	13.0	12.35	11.95	11.95	12.15	12.35
3	13.0	13.1	13.0	12.9	13.5	13.6	13.0	12.35	11.9	12.0	12.15	12.35
4	13.0	13.0	13.0	13.0	13.7	13.6	13.0	12.3	11.9	11.95	12.15	12.4
5	13.0	13.0	13.0	13.0	13.6	13.5	13.0	12.3	11.82	11.95	12.1	12.45
6	13.0	13.0	13.0	13.1	13.7	13.5	12.9	12.25	11.95	12.05	12.1	12.4
7	13.0	13.0	13.0	13.2	13.6	13.5	12.9	12.2	11.95	12.05	12.15	12.4
8	13.0	13.0	13.0	13.2	13.6	13.5	12.9	12.2	11.9	12.05	12.04	12.4
9	13.0	13.0	13.0	13.2	13.6	13.5	12.9	12.25	11.9	11.95	12.05	12.4
10	13.0	13.1	13.0	13.2	13.6	13.4	12.8	12.2	11.95	12.0	12.25	12.4
11	13.0	13.1	13.0	13.3	13.6	13.4	12.8	12.2	11.95	12.0	12.25	12.45
12	13.0	13.1	13.0	13.3	13.5	13.4	12.8	12.2	12.0	12.05	12.25	12.45
13	13.0	13.0	13.0	13.4	13.6	13.4	12.8	12.15	11.9	12.15	12.25	12.45
12	13.0	13.0	13.0	13.4	13.7	13.4	12.8	12.2	11.85	11.93	12.25	12.45
15	13.0	13.0	13.0	13.4	13.6	13.4	12.8	12.1	11.85	12.05	12.25	12.45
16	13.0	13.0	13.0	13.4	13.6	13.3	12.8	12.1	11.9	12.05	12.25	12.45
17	13.1	13.0	13.0	13.4	13.6	13.2	12.8	12.1	11.9	12.05	12.25	12.45
18	13.1	13.0	13.0	13.4	13.6	13.3	12.8	12.1	11.9	12.05	12.3	12.45
19	13.1	13.0	13.0	13.4	13.7	13.3	12.7	12.0	11.9	12.05	12.3	12.45
20	13.1	13.0	13.0	13.4	13.6	13.3	12.7	12.05	11.95	12.1	12.3	12.45
21	13.1	13.0	13.0	13.4	13.6	13.3	12.6	12.05	11.82	12.1	12.3	12.45
22	13.1	13.0	13.0	13.4	13.6	13.2	12.6	12.05	11.9	12.05	12.3	12.45
23	13.1	13.0	12.9	13.5	13.5	13.1	12.6	12.05	11.9	12.05	12.35	12.45
24	13.1	13.0	13.0	13.5	13.6	13.2	12.6	12.05	11.95	12.1	12.35	12.45
25	13.1	13.0	13.0	13.5	13.6	13.2	12.45	12.05	11.9	12.1	12.3	12.45
26	13.1	13.0	13.0	13.5	13.6	13.1	12.45	12.05	12.0	12.1	12.35	12.45
27	13 1	12.9	13.0	13.5	13.6	13.1	12.45	12.0	11.85	12.1	12.35	12.45
28	13.1	12.9	13.0	13.5	13.6	13.0	12.45	12.0	11.95	12.1	12.35	12.45
29	13.1	.....	13.0	13.5	13.6	13.0	12.4	12.0	11.95	12.1	12.35	12.45
30	13.1	.....	13.0	13.5	13.6	13.0	12.4	12.0	11.95	12.1	12.35	12.45
31	13.2	.....	13.0	.....	13.6	13.1	12.4	11.95	.....	12.15	.....	12.45

NOTE.—Ice reported Feb. 7–16 and Dec. 23–31.

KLAMATH RIVER NEAR HAPPY CAMP, CAL.

Location.—At Evans Ferry, in the NW. ¼ sec. 16, T. 16 N., R. 8 E., Humboldt meridian, about 4 miles southeast of Happy Camp. Indian Creek enters 3½ miles below the station.

Records available.—September 10 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in two sections on left bank. Low-water section is 60 feet and upper section 1,200 feet below ferry cable.

Channel.—Bowlders and gravel.

Discharge measurements.—Made from suspension bridge about 2,000 feet above gage.

Diversions.—Water is diverted from the main river and tributaries, above the station, for use in irrigation, placer mining, and power development.

The following discharge measurement was made by G. T. Peekema:

September 10, 1911: Gage height, 2.55 feet; discharge, 1,670 second-feet.

Daily gage height, in feet, of Klamath River near Happy Camp, Cal., for 1911.

[Chas. J. Schuffler, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	2.6	2.9	3.3	16	2.55	2.8	3.5	3.3
2	.....	2.65	2.9	3.3	17	2.55	2.8	3.4	3.4
3	.....	2.8	2.9	3.3	18	2.6	2.8	3.3	3.4
4	.....	2.8	2.9	3.3	19	2.6	2.8	3.3	3.3
5	.....	2.7	2.9	3.3	20	2.6	2.8	3.3	3.3
6	.....	2.7	2.9	3.4	21	2.6	2.8	3.3	3.3
7	.....	2.7	3.0	3.3	22	2.6	2.8	3.2	3.4
8	.....	2.8	3.0	3.3	23	2.6	2.8	3.2	3.3
9	.....	3.0	3.0	3.3	24	2.6	2.8	3.2	3.4
10	2.55	2.75	3.0	3.3	25	2.65	2.8	3.2	3.4
11	2.55	2.8	3.0	3.3	26	2.6	2.8	3.2	3.4
12	2.6	2.8	3.0	3.3	27	2.7	2.9	3.2	3.4
13	2.6	2.9	3.1	3.3	28	2.65	2.9	3.2	3.4
14	2.6	3.0	3.1	3.3	29	2.6	2.9	3.2	3.3
15	2.6	2.9	3.5	3.3	30	2.6	2.9	3.2	3.4
					31	.....	2.9	.....	3.5

KLAMATH RIVER NEAR REQUA, CAL.

Location.—At Scofield Ferry, in sec. 29, T. 13 N., R. 2 E., Humboldt meridian, 30 miles below mouth of Trinity River and about 9 miles above Requa and the mouth of the river.

Records available.—December 25, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Staff in four sections on right bank at ferry cable.

Channel.—Gravel; may shift slightly during high water.

Discharge measurements.—Made from ferryboat.

Diversions.—Water is diverted for irrigation and power development from main river in Oregon and tributaries in California.

Estimates are withheld until additional measurements can be made.

Discharge measurements of Klamath River near Requa, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 6	E. O. Christiansen	5.45	2,980
Dec. 15	....do	6.36	3,770

NOTE.—Measurements made from ferry boat at gage.

Daily gage height, in feet, of Klamath River near Requa, Cal., for 1911.

[M. F. Scofield, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.31	15.35	9.84	15.02	12.18	13.02	8.64	6.34	5.43	5.50	5.70	6.32
2	8.26	14.48	9.72	14.78	12.54	12.78	8.55	6.28	5.41	5.50	5.70	6.28
3	8.21	14.38	9.66	14.46	12.68	12.46	8.52	6.24	5.40	5.52	5.70	6.28
4	8.17	14.16	10.00	14.16	12.62	12.13	8.54	6.22	5.40	5.65	5.70	6.28
5	8.13	13.68	11.28	15.14	13.12	11.94	8.54	6.18	5.41	5.65	5.70	6.35
6	8.10	13.19	12.03	15.22	12.86	11.94	8.52	6.14	5.43	5.60	5.70	6.82
7	8.08	12.89	14.61	14.12	12.42	11.73	8.38	.....	5.45	5.60	5.70	6.85
8	8.02	12.24	14.84	.....	12.38	11.62	8.12	.....	5.45	5.62	5.82	6.78
9	8.09	11.94	13.38	13.78	12.22	11.46	7.96	6.00	5.48	5.95	6.12	6.60
10	8.40	11.82	12.88	13.98	11.86	11.48	7.75	5.98	5.45	5.85	6.88	6.52
11	9.04	12.26	12.32	13.90	11.74	11.79	7.68	5.96	5.45	5.85	6.55	6.45
12	8.93	12.19	12.02	13.36	11.82	11.85	7.68	5.93	5.42	5.75	6.20	6.40
13	8.62	12.48	11.88	12.64	11.78	11.80	7.70	5.90	5.50	5.75	6.55	6.35
14	8.59	12.12	11.92	12.58	11.61	11.84	7.74	5.88	5.52	6.00	6.70	6.35
15	8.52	11.66	11.98	12.52	.....	11.66	7.80	5.85	5.50	6.00	8.78	6.35
16	8.54	11.28	12.18	12.46	.....	11.22	7.72	5.81	5.42	5.80	8.98	6.60
17	8.56	11.18	12.49	12.56	11.76	10.93	7.58	5.78	5.40	5.78	7.65	7.02
18	9.78	11.36	12.88	12.62	14.08	10.65	7.46	5.76	5.35	5.70	7.22	6.82
19	14.12	11.16	13.06	12.54	13.47	10.42	7.38	5.72	5.35	5.70	6.90	6.70
20	18.70	11.04	13.24	12.38	12.92	10.30	7.25	5.70	5.35	5.65	6.80	6.62
21	15.08	10.88	13.48	12.34	12.69	10.12	7.14	5.64	5.35	5.65	6.70	6.52
22	13.58	10.68	13.96	12.46	13.00	9.86	7.00	5.62	5.35	5.65	6.60	6.65
23	12.46	10.69	14.36	12.68	13.26	9.56	6.88	5.62	5.32	5.62	6.50	6.80
23	11.65	10.48	14.42	13.28	13.98	9.48	6.84	5.58	5.32	5.65	6.42	6.85
25	11.62	10.42	13.89	13.74	12.52	9.16	6.82	5.55	5.40	5.65	6.38	6.80
26	11.68	10.12	13.42	13.68	11.98	9.12	6.76	5.52	5.50	5.68	6.35	6.82
27	11.64	9.98	13.02	13.36	11.78	9.18	6.65	5.50	5.52	5.70	6.32	7.40
28	12.22	.....	12.88	12.86	11.76	9.16	6.60	5.49	5.55	5.70	6.30	7.60
29	12.46	.....	13.22	12.48	11.86	8.96	6.55	5.48	5.50	5.70	6.32	7.85
30	13.56	.....	13.90	12.26	12.14	8.82	6.49	5.46	5.50	5.70	6.35	7.80
31	15.55	.....	14.58	.....	12.36	.....	6.40	5.45	.....	5.70	.....	7.20

WILLIAMSON RIVER AT CHILOQUIN, OREG.

Location.—In sec. 3, T. 35 S., R. 7 E., at the highway bridge at Chiloquin, just above the mouth of Sprague River.

Records available.—July 25, 1911, to December 31, 1911.

Gage.—Vertical staff on the wagon bridge.

Channel.—Rocks and gravel, probably permanent.

Discharge measurements.—Made from wagon bridge.

Accuracy.—Conditions not very favorable at this station, but fairly reliable results have been obtained.

Cooperation.—This station is maintained by the United States Reclamation Service and the records are worked up and published by the Survey.

Discharge measurements of Williamson River at Chiloquin, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
July 25	L. Moser	4.00	579
Nov. 21	W. O. Harmon	4.40	740

Daily gage height, in feet, of Williamson River at Chiloquin, Oreg., for 1911.

[Alfred Gentry, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.0	3.9	3.9	4.2	4.5	16	4.0	3.9	4.0	4.3	4.5
2	4.0	3.9	3.9	4.2	4.5	17	4.0	3.9	4.1	4.3	4.5
3	4.0	3.9	3.9	4.2	4.5	18	4.0	3.9	4.1	4.3	4.5
4	4.0	3.9	3.9	4.2	4.5	19	4.0	3.9	4.1	4.3	4.5
5	4.0	3.9	3.9	4.2	4.5	20	3.9	3.9	4.1	4.3	4.5
6	4.0	3.9	3.9	4.2	4.5	21	3.9	3.9	4.1	4.3	4.4
7	4.0	3.9	3.9	4.2	4.5	22	3.9	3.9	4.1	4.4	4.4
8	4.0	3.9	3.9	4.2	4.5	23	3.9	3.9	4.1	4.4	4.3
9	4.0	3.9	3.9	4.2	4.5	24	3.9	3.9	4.1	4.4	4.3
10	4.0	3.9	3.9	4.2	4.5	25	3.9	3.9	4.1	4.4	4.2
11	4.0	3.9	3.9	4.2	4.5	26	3.9	3.9	4.2	4.4	4.2
12	4.0	3.9	3.9	4.2	4.5	27	3.9	3.9	4.2	4.4	4.2
13	4.0	3.9	4.0	4.2	4.5	28	3.9	3.9	4.2	4.5	4.2
14	4.0	3.9	4.1	4.2	4.5	29	3.9	3.9	4.2	4.5	4.2
15	4.0	3.9	4.1	4.2	4.5	30	3.9	3.9	4.2	4.5	4.2
						31	3.9	.....	4.2	.....	4.2

WOOD RIVER AT FORT KLAMATH, OREG.

Location.—In sec. 22, T. 33 S., R. 7½ E., at a highway bridge one-fourth mile north of Fort Klamath.

Records available.—August 5, 1911, to December 31, 1911.

Gage.—Vertical staff attached to bridge.

Channel.—Clean gravel, liable to shift slightly.

Discharge measurements.—Made from highway bridge.

Accuracy.—Field conditions are excellent at this station and reliable results should be obtained.

Cooperation.—This station is maintained by the United States Reclamation Service and the records are worked up and published by the Survey.

Discharge measurements of Wood River at Fort Klamath, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
July 25	L. Moser	1.45	318
Aug. 5	....do	1.65	339
30	R. W. Davenport	1.40	295
Nov. 18	W. O. Harmon	1.52	274

Daily gage height, in feet, of Wood River at Fort Klamath, Oreg., for 1911.

[Guss Page, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.35	1.45	1.40	1.46	16	1.55	1.40	1.45	1.65	1.45
2	.....	1.35	1.45	1.40	1.45	17	1.55	1.40	1.45	1.55	1.40
3	.....	1.35	1.45	1.40	1.45	18	1.55	1.40	1.45	1.60	1.40
4	.....	1.35	1.50	1.40	1.42	19	1.50	1.40	1.45	1.55	1.35
5	1.70	1.35	1.50	1.38	1.45	20	1.50	1.40	1.45	1.50	1.30
6	1.60	1.35	1.45	1.40	1.48	21	1.50	1.40	1.45	1.50	1.20
7	1.60	1.35	1.45	1.45	1.45	22	1.50	1.40	1.45	1.50	1.20
8	1.60	1.35	1.45	1.50	1.43	23	1.50	1.40	1.40	1.48	1.25
9	1.65	1.40	1.45	1.50	1.40	24	1.45	1.45	1.40	1.48	1.25
10	1.65	1.40	1.45	1.50	1.40	25	1.45	1.50	1.40	1.46	1.25
11	1.65	1.40	1.45	1.50	1.40	26	1.45	1.50	1.40	1.45	1.30
12	1.55	1.40	1.45	1.55	1.40	27	1.40	1.50	1.40	1.45	1.30
13	1.60	1.40	1.45	1.60	1.45	28	1.40	1.45	1.40	1.44	1.25
14	1.55	1.40	1.45	1.65	1.48	29	1.40	1.45	1.40	1.45	1.25
15	1.55	1.40	1.45	1.80	1.50	30	1.40	1.45	1.40	1.50	1.27
						31	1.35	.....	1.40	.....	1.30

LOST RIVER AT OLENE, OREG.

Location.—At Olene highway bridge, in sec. 14, T. 39 S., R. 10 E.

Records available.—May 20, 1907, to December 31, 1911.

Drainage area.—1,290 square miles.

Gage.—Vertical staff.

Channel.—Permanent; control, a rocky riffle 200 feet below gage.

Discharge measurements.—At high stages made from the bridge. At extreme low stages by wading at the riffle below the bridge.

Diversions and inflow.—A slough connecting Lost River with Klamath River joins Lost River 5 miles below the Olene station and Klamath River 2 miles below Lake Ewauna. Through this slough it is proposed to divert part of the waters from Lost River into Klamath River, and thus reclaim lands bordering Tule Lake. At present, however, the slough has been artificially closed and the flow has been shut off for several years. Before it was diked no water flowed except during high water, the direction depending upon whether Klamath or Lost River was the higher. There is a small amount of inflow below Olene. One spring was measured April 14, 1908, giving a discharge of 2.9 second-feet, and during the irrigating season there is probably some waste water from irrigation. Nuss Lake is situated half a mile from the left bank of Lost River and 1 mile below Olene. It has no surface outlet except at flood time, but it is possible that a little water passes underground from this lake to the river during the summer months.

Accuracy.—The conditions at this station are favorable for good results.

Cooperation.—Station maintained by the United States Reclamation Service since May, 1909.

Discharge measurements of Lost River at Olene, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 28	L. Moser	7.43	2,240
28	.....do	7.35	2,100
Apr. 17	.....do	5.51	565

Daily gage height, in feet, of Lost River at Olene, Oreg., for 1911.

[A. T. Wilson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.60	4.62	4.55	7.70	5.45	4.58	4.50	4.45	4.56	4.52	4.54	4.54
2	4.58	4.62	4.54	7.70	5.08	4.57	4.50	4.46	4.52	4.52	4.52	4.54
3	4.58	4.62	4.54	7.60	4.94	4.57	4.50	4.45	4.50	4.52	4.52	4.54
4	4.56	4.62	4.56	7.10	4.92	4.57	4.50	4.45	4.50	4.52	4.52	4.54
5	4.55	4.65	4.64	6.70	4.90	4.57	4.50	4.45	4.50	4.52	4.52	4.54
6	4.55	4.77	4.82	6.50	4.88	4.57	4.50	4.45	4.50	4.52	4.52	4.53
7	4.55	4.88	5.27	7.20	4.87	4.56	4.50	4.45	4.50	4.52	4.52	4.53
8	4.55	4.89	5.85	7.20	4.88	4.56	4.50	4.45	4.51	4.52	4.52	4.53
9	4.54	4.68	5.60	6.60	4.88	4.58	4.50	4.45	4.51	4.52	4.52	4.53
10	4.54	4.70	5.70	6.30	4.85	4.60	4.48	4.45	4.51	4.52	4.52	4.53
11	4.55	4.70	5.70	6.20	4.82	4.60	4.47	4.45	4.51	4.52	4.52	4.53
12	4.55	4.70	5.55	5.80	4.78	4.61	4.44	4.45	4.51	4.52	4.52	4.53
13	4.55	4.70	5.55	5.65	4.77	4.62	4.43	4.45	4.51	4.52	4.52	4.53
14	4.55	4.72	5.55	5.60	4.76	4.61	4.43	4.43	4.51	4.52	4.52	4.53
15	4.55	4.74	5.65	5.55	4.74	4.60	4.43	4.43	4.51	4.52	4.53	4.53
16	4.55	4.77	5.75	5.48	4.70	4.60	4.44	4.43	4.51	4.52	4.54	5.53
17	4.54	4.80	5.70	5.48	4.69	4.60	4.44	4.43	4.51	4.52	4.54	4.53
18	4.54	4.72	5.90	5.60	4.69	4.40	4.44	4.43	4.51	4.52	4.54	4.53
19	4.55	4.66	6.20	5.65	4.69	4.29	4.44	4.44	4.51	4.52	4.54	4.53
20	4.56	4.62	6.40	5.50	4.69	4.33	4.45	4.45	4.51	4.52	4.54	4.53
21	4.56	4.57	7.40	5.37	4.70	4.40	4.45	4.45	4.51	4.52	4.54	4.53
22	4.57	4.55	7.60	5.38	4.72	4.41	4.45	4.48	4.51	4.52	4.54	4.53
23	4.57	4.55	8.10	5.40	4.72	4.48	4.45	4.58	4.51	4.52	4.54	4.53
24	4.57	4.56	8.70	5.36	4.72	4.52	4.45	4.62	4.51	4.52	4.54	4.53
25	4.58	4.55	9.20	5.34	4.70	4.51	4.45	4.62	4.51	4.52	4.54	4.53
26	4.58	4.55	8.70	5.26	4.68	4.51	4.45	4.62	4.51	4.54	4.54	4.53
27	4.58	4.55	7.90	5.26	4.64	4.52	4.46	4.65	4.52	4.54	4.54	4.53
28	4.58	4.55	7.40	5.14	4.62	4.52	4.46	4.80	4.52	4.54	4.54	4.53
29	4.58	.....	7.00	5.12	4.61	4.52	4.47	4.96	4.52	4.54	4.54	4.53
30	4.59	.....	7.70	5.36	4.60	4.52	4.47	4.84	4.52	4.54	4.54	4.53
31	4.60	.....	7.60	.....	4.59	.....	4.47	4.60	.....	4.54	.....	4.53

Daily discharge, in second-feet, of Lost River at Olene, Oreg., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	126	131	114	2,200	508	121	102	91	116	107	112	112
2	121	131	112	2,200	287	119	102	93	107	107	107	112
3	121	131	112	2,110	227	119	102	91	102	107	107	112
4	116	131	116	1,710	220	119	102	91	102	107	107	112
5	114	139	136	1,400	212	119	102	91	102	107	107	112
6	114	172	186	1,250	206	119	102	91	102	107	107	109
7	114	206	392	1,790	202	116	102	91	102	107	107	109
8	114	209	775	1,790	206	116	102	91	104	107	107	109
9	112	147	605	1,320	206	121	102	91	104	107	107	109
10	112	152	670	1,100	196	126	98	91	104	107	107	109
11	114	152	670	1,020	186	126	95	91	104	107	107	109
12	114	152	572	740	174	129	89	91	104	107	107	109
13	114	152	572	638	172	131	87	91	104	107	107	109
14	114	158	572	605	169	129	87	87	104	107	107	109
15	114	163	638	572	163	126	87	87	104	107	109	109
16	114	172	705	527	152	126	89	87	104	107	112	109
17	112	180	670	527	149	126	89	87	104	107	112	109
18	112	158	810	605	149	80	89	87	104	107	112	109
19	114	142	1,020	638	149	58	89	89	104	107	112	109
20	116	131	1,180	540	149	66	91	91	104	107	112	109
21	116	119	1,950	456	152	80	91	91	104	107	112	109
22	119	114	2,110	462	158	82	91	98	104	107	112	109
23	119	114	2,540	475	158	98	91	121	104	107	112	109
24	119	116	3,040	449	158	107	91	131	104	107	112	109
25	121	114	3,480	436	152	104	91	131	104	107	112	109
26	121	114	3,040	386	147	104	91	131	104	112	112	109
27	121	114	2,360	386	136	107	93	139	107	112	112	109
28	121	114	1,950	318	131	107	93	180	107	112	112	109
29	121	.....	2,110	307	129	107	95	235	107	112	112	109
30	124	.....	2,200	449	126	107	95	193	107	112	112	109
31	126	.....	2,110	.....	124	.....	95	126	.....	112	.....	109

NOTE.—Daily discharge determined from a rating curve well defined between 80 and 3,000 second-feet.

Monthly discharge of Lost River at Olene, Oreg., for 1911.

[Drainage area, 1,290 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	126	112	117	0.091	0.10	7,190	A.
February	209	114	144	.112	.12	8,000	A.
March	3,480	112	1,210	.938	1.08	74,400	A.
April	2,200	307	914	.709	.79	54,400	A.
May	508	124	182	.141	.16	11,200	A.
June	131	58	110	.085	.09	6,550	A.
July	102	87	94.4	.073	.08	5,800	A.
August	235	87	109	.084	.10	6,700	A.
September	116	102	105	.081	.09	6,250	A.
October	112	107	108	.084	.10	6,640	A.
November	112	107	110	.085	.09	6,550	A.
December	112	109	109	.084	.10	6,700	A.
The year	3,480	58	277	.215	2.90	200,000	

TULE LAKE NEAR MERRILL, OREG.

Location.—At J. F. Adams's ranch near the mouth of Lost River, in sec. 8, T. 41 S., R. 11 E.

Records available.—May 17, 1904, to December 31, 1911.

Gage.—Vertical staff fastened to a post driven in the lake bed. Elevation of zero of gage, 4,048.21 feet above sea level. When the station was established, the gage was referred to a bench mark on a juniper post near by. The bench mark at that time was 13.7 feet above the zero of the gage. On October 21, 1904, this elevation was verified. On May 11, 1907, the elevation of the same bench mark was found to be 12.87 feet above zero of the gage, and was independently verified on June 11, 1907, and again on November 27, 1908. It appears, therefore, that sometime between October, 1904, and May, 1907, gage was raised 0.83 foot. This was probably due to the action of ice in the lake, although nothing of this kind has been observed since that time. Just when it occurred it has been impossible to ascertain, and a graph of the heights has failed to reveal any critical points that would account for a sudden change. It is therefore likely that the gage was raised a little at a time during the winters of 1905–6 and 1906–7.

Accuracy.—Gage heights prior to May, 1907, should not be used for refined studies.

Cooperation.—This station has been maintained by the United States Reclamation Service since 1909.

Daily gage height, in feet, of Tule Lake near Merrill, Oreg., for 1911.

[J. Frank Adams, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1				7.9			7.6					
2									6.6			6.1
3						7.95						
4		7.2	7.25								6.1	
5								7.1				
6					8.2							
7	7.0									6.3		
8				8.25			7.5					
9									6.5			6.1
10						7.95						

Daily gage height, in feet, of Tule Lake near Merrill, Oreg., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
11		7.2	7.3								6.1	
12								6.95				
13												
14	7.1									6.3		
15				8.5	8.1		7.45					
16									6.45			6.1
17						7.95						
18		7.2	7.4								6.1	
19								6.8				
20					8.02							
21	7.1									6.2		
22				8.65			7.35					
23									6.4			6.1
24						7.7						
25		7.2	7.55								6.1	
26								6.7				
27					7.95							
28	7.1									6.1		
29				8.5			7.25					
30									6.3			6.1
31												

NOTE.—Lake frozen over Jan. 21 to Feb. 25 and Dec. 10-31.

MILLER CREEK NEAR LORELLA, OREG.

Location.—At highway bridge at Langell Valley, 1 mile east of the Swingle ranch, 3 miles south of Lorella, Oreg., in sec. 7, T. 40 S., R. 14 E.

Records available.—August 10, 1904, to December, 1908; April 1, 1909, to December 31, 1911.

Drainage area.—270 square miles.

Gage.—Friez automatic; installed January 30, 1910. Gage was originally established August 10, 1904, in sec. 12, T. 39 S., R. 13 E., 9 miles northeast of Lorella, at the lower end of Horsefly Valley; removed to the present site, which includes 50 square miles of drainage area more than that of the upper site, April 1, 1909.

Channel.—Rocky; practically permanent.

Discharge measurements.—Made from bridge or by wading.

Diversions.—Station is just below the diversion dam of a small irrigation flume which carries about 1 second-foot of water.

Accuracy.—Records somewhat fragmentary up to time Friez gage was installed; estimates have been made for all periods of missing observations; determinations of total run-off fairly accurate.

Cooperation.—Station maintained by United States Reclamation Service since May, 1909.

Discharge measurements of Miller River near Lorella, Oreg., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 21	L. Moser	6.40	990
21	do	6.65	1,080
29	do	7.55	1,800
31	do	6.65	1,080
31	do	8.05	2,160
Apr. 6	do	6.65	1,110
16	do	4.90	334
May 3[a]	do	3.90	88.5

[a] Made by wading.

Daily gage height, in feet, of Miller Creek near Lorella, Oreg., for 1911.

[Friez Auto Gage, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.70	2.17	.....	7.70	3.95	2.96	2.70	2.27	2.25	2.60	2.80	.....
2	2.69	2.16	.....	7.20	3.87	2.90	2.68	2.27	2.30	.....	2.80	2.80
3	2.69	2.14	.....	6.30	3.85	2.91	2.65	2.29	2.30	.....	2.80	2.80
4	2.69	2.20	2.45	6.40	3.79	2.89	2.62	2.30	2.30	.....	2.80	2.80
5	.....	2.20	2.65	7.40	3.85	2.86	2.59	2.30	2.35	.....	2.81	2.80
6	.....	2.20	3.20	6.60	4.00	2.88	2.56	2.30	2.39	.....	2.82	2.81
7	2.55	2.20	3.00	6.20	3.90	3.00	2.54	2.30	2.39	2.68	2.83	2.82
8	2.49	.....	3.10	5.80	3.81	3.03	2.49	2.30	2.38	2.67	2.86	2.82
9	2.46	.....	3.20	5.70	3.75	3.03	2.44	2.30	2.40	2.68	2.97	2.90
10	2.42	.....	3.40	5.10	3.65	2.93	2.40	2.30	2.39	.....	2.97	2.90
11	2.40	2.20	3.35	5.20	3.55	2.84	2.40	2.35	2.38	.....	3.00	2.90
12	.....	2.20	3.35	.....	3.45	2.70	2.40	2.40	2.38	.....	3.00	2.90
13	.....	2.20	3.40	.....	3.36	2.62	2.40	2.43	2.38	.....	3.00	2.90
14	2.35	.....	3.50	.....	3.29	2.76	2.39	2.42	2.38	2.70	2.97	2.90
15	2.25	.....	3.55	4.86	3.23	2.65	2.40	2.38	2.38	.....	2.98	2.90
16	2.20	.....	3.80	5.30	3.20	2.65	2.40	2.32	2.40	.....	3.10	2.92
17	2.20	.....	4.10	5.30	3.30	2.77	2.39	2.30	2.42	.....	3.14	2.92
18	2.20	2.20	4.20	5.08	3.69	2.62	2.40	2.30	2.46	.....	3.07	2.93
19	2.20	2.20	4.09	4.75	3.76	2.56	2.40	2.30	2.49	.....	3.00	2.93
20	2.20	.....	4.60	4.78	3.65	2.52	2.38	2.30	2.49	.....	2.94	2.93
21	2.20	.....	5.20	4.85	3.50	2.50	2.38	2.30	2.50	2.80	2.90	2.94
22	.....	.....	6.20	4.84	3.34	2.52	2.30	2.30	2.51	.....	2.88	3.05
23	.....	.....	7.15	4.78	3.20	2.68	2.30	2.30	2.50	.....	2.88	3.40
24	.....	.....	7.40	4.60	3.00	2.69	2.30	2.30	2.50	.....	2.88	3.40
25	.....	.....	7.30	4.50	2.98	2.67	2.30	2.30	2.55	.....	2.80	3.40
26	.....	.....	6.95	4.39	.....	2.68	2.31	2.30	2.61	.....	2.80	3.40
27	.....	.....	7.30	4.38	2.99	2.69	2.30	2.28	2.61	.....	2.80	3.40
28	2.20	.....	7.50	4.39	2.91	2.67	2.30	2.27	2.60	.....	2.80	.....
29	2.20	.....	7.55	4.21	2.86	2.65	2.28	2.27	2.60	.....	2.80	.....
30	2.20	.....	7.70	4.05	2.87	2.65	2.28	2.26	2.60	.....	.....	.....
31	2.16	.....	7.90	.....	2.81	.....	2.27	2.25	.....	.....	.....	.....

NOTE.—Probably no material effect from ice at this station except perhaps late in December.

Daily discharge, in second-feet, of Miller Creek near Lorella, Oreg., for 1911.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.7	0.1	1.7	1,900	106	12	5.7	0.6	0.4	4.0	7.7	7.7
2	5.5	.1	1.8	1,480	95	10	5.4	.6	.7	4.0	7.7	7.7
3	5.5	.1	1.9	879	92	10	4.8	.6	.7	4.2	7.7	7.7
4	5.5	.2	2.0	938	85	9.9	4.3	.7	.7	4.4	7.7	7.7
5	5.0	.2	4.8	1,640	92	9.1	3.9	.7	1.1	4.8	7.9	7.7
6	4.0	.2	23	1,060	112	9.6	3.4	.7	1.4	5.0	8.2	7.9
7	3.3	.2	13	823	99	13	3.2	.7	1.4	5.4	8.4	8.2
8	2.5	.2	17	626	87	14	2.5	.7	1.3	5.2	9.1	8.2
9	2.2	.2	23	582	80	14	1.9	.7	1.5	5.4	12	10
10	1.7	.2	39	362	68	11	1.5	.7	1.4	5.4	12	10
11	1.5	.2	34	393	56	8.7	1.5	1.1	1.3	5.5	13	10
12	1.4	.2	34	370	44	5.7	1.5	1.5	1.3	5.6	13	10
13	1.2	.2	39	345	35	4.8	1.5	1.8	1.3	5.6	13	10
14	1.1	.2	50	320	29	6.9	1.4	1.7	1.3	5.7	12	10
15	.4	.2	56	296	25	4.8	1.5	1.3	1.3	6.0	12	10
16	.2	.2	86	426	23	4.8	1.5	.9	1.5	6.3	17	11
17	.2	.2	127	426	30	7.1	1.4	.7	1.7	6.6	19	11
18	.2	.2	144	356	73	4.3	1.5	.7	2.2	6.9	16	11
19	.2	.2	126	268	81	3.4	1.5	.7	2.5	7.2	13	11
20	.2	.3	231	275	68	2.9	1.3	.7	2.5	7.5	11	11
21	.2	.5	393	293	50	2.6	1.3	.7	2.6	7.7	10	11
22	.2	.6	823	290	34	2.9	.7	.7	2.7	7.7	9.6	15
23	.2	.9	1,440	275	23	5.4	.7	.7	2.6	7.7	9.6	39
24	.2	1.0	1,640	231	13	5.5	.7	.7	2.6	7.7	9.6	39
25	.2	1.2	1,560	207	12	5.2	.7	.7	3.3	7.7	7.7	39

Daily discharge, in second-feet, of Miller Creek near Lorella, Oreg., for 1911—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
26	0.2	1.3	1,300	182	12	5.4	0.8	0.7	4.2	7.7	7.7	39
27	.2	1.5	1,560	180	13	5.5	.7	.6	4.2	7.7	7.7	39
28	.2	1.6	1,720	182	10	5.2	.7	.6	4.0	7.7	7.7	39
29	.2	.....	1,770	146	9.1	4.8	.6	.6	4.0	7.7	7.7	34
30	.2	.....	1,900	120	9.4	4.8	.6	.5	4.0	7.7	7.7	28
31	.1	.....	2,070	.....	7.9	.....	.6	.4	.....	7.7	.....	23

NOTE.—Daily discharge determined from a well-defined rating curve except at extreme low stages. Discharge interpolated for days on which gage was not read. No correction made for possible effect from ice.

Monthly discharge of Miller Creek near Lorella, Oreg., for 1911.

[Drainage area, 270 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	5.7	0.1	1.60	0.0059	0.007	98	D.
February	1.6	.1	.44	.0016	.002	24	D.
March	2,070	1.7	556	2.06	2.38	34,200	A.
April	1,900	120	529	1.96	2.19	31,500	A.
May	112	7.9	50.8	.188	.22	3,120	C.
June	14	2.6	7.09	.026	.03	422	D.
July	5.7	.6	1.91	.0071	.01	117	D.
August	1.8	.4	.80	.0030	.003	49	D.
September	4.2	.4	2.06	.076	.08	123	D.
October	7.7	4.0	6.30	.023	.03	388	D.
November	19	7.7	10.4	.038	.04	619	D.
December	39	7.7	17.2	.064	.07	1,060	D.
The year	2,070	.1	99.1	.367	5.072	72,000	

SHASTA RIVER NEAR MONTAGUE, CAL.

Location.—At highway bridge in the N. ½ NE. ¼ sec. 33, T. 45 N., R. 6 W., 1¼ miles southwest of Montague. Little Shasta River enters 1 mile above and Yreka Creek 5½ miles below the station.

Records available.—August 24 to December 31, 1911.

Drainage area.—Not measured.

Gage.—In two sections; high-water gage painted on upstream caisson of bridge pier near right bank; vertical staff for low water on same pier.

Channel.—Small bowlders and gravel.

Discharge measurements.—Made from upstream side of bridge and by wading.

Diversions.—Water is diverted for irrigation and for use in power development above the station.

Discharge measurements of Shasta River near Montague, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 24	Harry Barnes	2.80	102
Sept. 3	G. T. Peekema	2.75	126
Oct. 25	Harry Barnes	2.82	158

NOTE.—All measurements made by wading. Measurements of Aug. 24 and Oct. 25 by engineer of Irrigation Investigations, Department of Agriculture.

Daily gage height, in feet, of Shasta River near Montague, Cal., for 1911.

[D. S. Lucas, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	2.65	2.85	3.0	16	2.75	2.8	2.95	3.0
2	.....	2.7	2.85	3.0	17	2.8	2.8	2.95	3.0
3	2.75	2.7	2.9	3.0	18	2.8	2.8	3.0	3.0
4	2.75	2.7	2.9	3.0	19	2.8	2.8	2.95	3.0
5	2.8	2.7	2.9	3.0	20	2.8	2.8	3.0	3.0
6	2.8	2.7	2.9	3.0	21	2.8	2.8	2.95	2.95
7	2.75	2.7	2.9	3.0	22	2.8	2.8	2.95	3.0
8	2.75	2.7	2.9	3.0	23	2.8	2.8	3.0	3.0
9	2.75	2.8	2.9	3.0	24	2.7	2.8	3.0	3.0
10	2.8	2.85	2.9	3.0	25	2.7	2.8	3.0	3.0
11	2.8	2.8	2.95	3.0	26	2.75	2.85	3.0	3.0
12	2.8	2.8	2.95	3.0	27	2.75	2.85	3.0	3.0
13	2.8	2.8	2.95	3.0	28	2.6	2.85	3.0	3.0
14	2.8	2.8	2.95	3.0	29	2.6	2.85	3.0	2.95
15	2.75	2.8	2.95	3.0	30	2.6	2.85	3.0	2.95
					31	.....	2.85	.....	2.95

EAST FORK OF SCOTT RIVER NEAR CALLAHAN, CAL.

Location.—About 500 feet west of W. Schneider's ranch house, in sec. 18, T. 40 N., R. 7 W., in the Shasta National Forest, and about 6 miles east of Callahan.

Records available.—November 1, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to a willow tree on left bank 30 feet above foot log.

Channel.—Gravel and bowlders and fairly permanent.

Discharge measurements.—Made from foot log below gage and by wading.

Accuracy.—Results are good for periods covered by gage heights.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of East Fork of Scott River near Callahan, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 10[a]	G. T. Peekema	3.80	85
May 30	.....do	3.92	121
Sept. 20	.....do	2.80	1.6

[a] Measurement made from foot log.

Daily gage height, in feet, of East Fork of Scott River near Callahan, Cal., for 1911.

[F. P. Cunningham and W. L. Schneider, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.2	3.7	3.3	4.5	.....	.....	3.2	.....	.....	.....	2.0	.....
2	.....	.....	3.3	.....	.....	.....	.....	.....	.....	2.8	.....	.....
3	.....	.....	3.3	.....	3.8	.....	.....	.....	.....	.....	.....	3.0
4	.....	.....	3.4	.....	.....	4.2	.....	.....	.....	.....	.....	.....
5	.....	.....	3.6	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	.....	.....	4.85	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	.....	.....	4.3	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	.....	.....	4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	.....	3.4	3.85	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	.....	3.5	3.8	3.8	3.9	4.1	3.1	.....	.....	.....	.....	.....
11	.....	3.5	3.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	.....	.....	3.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	.....	.....	3.8	3.5	.....	.....	.....	.....	.....	.....	.....	.....
14	.....	.....	3.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	.....	.....	3.8	.....	.....	.....	.....	.....	.....	2.8	.....	.....
16	.....	.....	3.8	.....	4.0	3.9	.....	.....	.....	.....	2.9	.....
17	3.1	.....	3.85	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	3.15	.....	3.9	.....	.....	.....	3.0	.....	.....	.....	.....	3.0
19	3.7	.....	4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	3.6	.....	4.0	.....	4.0	3.7	.....	.....	2.8	.....	.....	.....
21	3.5	.....	.....	3.7	.....	.....	.....	.....	.....	.....	.....	.....
22	3.4	.....	.....	.....	.....	.....	2.9	.....	.....	.....	.....	.....
23	3.4	.....	.....	.....	.....	3..6	.....	.....	.....	.....	.....	.....
24	3.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	3.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	3.4	.....	.....	3.9	.....	.....	2.8	.....	.....	.....	.....	.....
27	3.45	.....	.....	.....	4.1	3.4	.....	.....	.....	.....	.....	.....
28	3.4	3.3	4.2	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	3.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	4.0	.....	.....	3.8	3.9	.....	.....	.....	.....	.....	2.9	.....
31	3.9	.....	.....	.....	4.1	.....	.....	.....	.....	2.0	.....	3.0

Daily discharge, in second-feet, of East Fork of Scott River near Callahan, Cal., for 1910–11.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1910.			1910.			1910.		
1	6	18	11	11	71	21	16	20
2	7	23	12	11	90	22	16	20
3	7	32	13	11	70	23	16	15
4	7	43	14	11	40	24	38	15
5	7	32	15	11	30	25	23	15
6	7	23	16	11	30	26	20	15
7	7	20	17	14	30	27	20	15
8	7	23	18	16	20	28	18	15
9	7	43	19	16	20	29	16	15
10	7	56	20	16	20	30	16	15
						31	.....	16

Daily discharge, in second-feet, of East Fork of Scott River near Callahan, Cal., for 1910–11—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1.	16	71	23	265	88	160	16				0	
2.	16	71	23	245	88	170	16			2		
3.	16	71	23	225	88	175	15					7
4.	16	71	32	205	88	180	14					
5.	16	71	56	185	88	175	14					
6.	16	32	382	165	88	170	13					
7.	16	32	205	145	108	170	13					
8.	16	32	130	125	108	165	12					
9.	11	32	98	105	108	160	11					
10.	11	43	88	88	108	155	11					
11.	11	43	88	73	112	147	11					
12.	11	33	88	58	115	140	10					
13.	11	33	88	43	119	132	10					
14.	11	33	88	40	123	124	9					
15.	11	33	88	40	126	116	8			2		
16.	11	33	88	40	130	108	8				4	
17.	11	33	98	45	130	99	7					
18.	14	33	108	50	130	89	7					7
19.	71	33	130	55	130	80	6					
20.	56	33	130	60	130	71	6		2			
21.	43	33	135	71	135	66	5					
22.	32	33	140	78	140	61	4					
23.	32	33	150	86	140	56	3					
24.	32	33	155	93	145	50	3					
25.	32	33	160	101	145	44	3					
26.	32	33	170	108	150	38	2					
27.	38	33	175	103	155	32						
28.	32	23	180	98	140	28						
29.	43		200	93	124	24						
30.	130		220	88	108	20					4	
31.	108		240		155					0		7

NOTE.—Daily discharge, 1910–11, determined from a rating curve well defined below 150 second-feet. Discharge interpolated or estimated for days when the gage was not read. These values are based on hydrograph comparisons with the discharge at other near-by stations and are very roughly approximate. They are published as a matter of record only and should be used with caution.

Monthly discharge of East Fork of Scott River near Callahan, Cal., for 1910–11.

Month.	Mean discharge in second-feet.	Run-off (total in acre-feet).	Accuracy.
1910.			
November	13.2	786	D.
December	29.4	1,810	D.
1911.			
January	29.7	1,830	C.
February	40.0	2,220	D.
March	128	7,870	C.
April	106	6,310	C.
May	121	7,440	C.
June	107	6,370	C.
July	8.0	492	D.
August	2.0	123	D.
September	2.0	119	D.
October	1.4	86	D.
November	2.9	173	D.
December	7.0	430	D.
The year	46.2	33,500	

NOTE.—Mean monthly discharge estimated August to December, 1911.

SCOTT RIVER NEAR SCOTT BAR, CAL.

Location.—At highway bridge 2½ miles west of Scott Bar, in the NW. ¼ sec. 6, T. 45 N., R. 10 W., and about one-half of a mile above junction with Klamath River.
Records available.—September 12 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff fastened to left abutment of bridge near upstream end.
Channel.—Bowlders and gravel.
Discharge measurements.—Made from highway bridge at gage or by wading.
Winter flow.—Some ice during December, 1911, but it is not believed that it affected the flow at the gage.
Diversions.—Some water is diverted for use in mining and irrigation above the station.

The following discharge measurement was made by G. T. Peekema:
September 13, 1911: Gage height, 1.48 feet; discharge, 85 second-feet.

Daily gage height, in feet, of Scott River near Scott Bar, Cal., for 1911.

[George A. Milne, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	1.5	1.6	1.7	16	1.5	1.6	1.9	1.7
2	.....	1.5	1.6	1.7	17	1.5	1.6	1.9	1.75
3	.....	1.5	1.6	1.7	18	1.5	1.6	1.9	1.75
4	.....	1.5	1.6	1.7	19	1.5	1.6	1.8	1.7
5	.....	1.5	1.6	1.75	20	1.5	1.6	1.8	1.7
6	.....	1.5	1.6	1.75	21	1.5	1.6	1.8	1.7
7	.....	1.5	1.6	1.75	22	1.5	1.55	1.8	1.7
8	.....	1.5	1.6	1.7	23	1.5	1.55	1.8	1.7
9	.....	1.5	1.6	1.7	24	1.4	1.55	1.8	1.7
10	.....	1.5	1.7	1.7	25	1.4	1.55	1.8	1.7
11	.....	1.5	1.7	1.7	26	1.4	1.7	1.8	1.7
12	1.5	1.5	1.7	1.7	27	1.5	1.7	1.7	1.7
13	1.5	1.5	1.7	1.7	28	1.5	1.7	1.7	1.7
14	1.5	1.7	1.7	1.7	29	1.5	1.6	1.7	1.7
15	1.5	1.6	2.3	1.7	30	1.5	1.6	1.7	1.7
					31	.....	1.6	.....	1.7

NOTE.—Shore ice during the latter part of December.

INDIAN CREEK NEAR HAPPY CAMP, CAL.

Location.—Above highway bridge at Roberts ranch, in the NW. ¼ sec. 22, T. 17 N., R. 7 E., Humboldt meridian, about 4 miles north of Happy Camp and the mouth of the creek in Klamath National Forest.
Records available.—September 8 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff fastened to alder tree on left bank, about 700 feet above bridge.
Channel.—Small bowlders and gravel.
Discharge measurements.—Made from bridge below gage and by wading.
Diversions.—The Reeve Davis Consolidated Mining Co.'s ditch diverts water above the station and returns it below the station; other small ditches take water for use in mining.
Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

The following discharge measurement was made by G. T. Peekema by wading 400 feet below the gage:
September 8, 1911: Gage height, 2.58 feet; discharge, 39 second-feet.

Daily gage height, in feet, of Indian Creek near Happy Camp, Cal., for 1911.

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	2.55	.....	2.7	16	2.6	2.6	3.6	.....
2	.....	2.5	.....	.....	17	2.6	2.6	3.3	2.8
3	.....	.....	.....	2.6	18	2.6	.....	.....	.....
4	.....	2.6	.....	.....	19	2.55	2.6	.....	.....
5	.....	2.6	.....	.....	20	.....	2.55	.....	2.7
6	.....	2.6	2.5	3.6	21	2.5	2.5	.....	.....
7	.....	2.5	.....	.....	22	2.5	.....	3.0	2.7
8	2.6	2.7	.....	.....	23	2.5	2.5	.....	.....
9	2.6	2.6	2.95	2.9	24	2.45	.....	.....	2.8
10	2.6	2.6	2.8	.....	25	2.6	2.5	.....	.....
11	2.6	.....	.....	2.8	26	2.6	.....	3.0	2.7
12	2.7	2.6	.....	2.7	27	2.6	2.55	.....	.....
13	2.6	2.65	.....	2.7	28	2.6	2.55	3.0	2.8
14	2.6	2.7	3.0	2.7	29	2.6	.....	.....	.....
15	2.6	.....	4.4	2.7	30	2.55	2.55	2.8	2.7
					31	.....	.....	.....	.....

REEVE DAVIS CONSOLIDATED MINING CO.'S DITCH NEAR HAPPY CAMP, CAL.

Location.—In flume, in the SE. ¼ sec. 16, T. 17 N., R. 7 E., Humboldt meridian, about 5 miles north of Happy Camp.

Records available.—September 8 to December 31, 1911.

Gage.—Vertical staff fastened to right side of flume.

Discharge measurements.—Made from foot bridge at gage.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

The following discharge measurement was made by G. T. Peekema:
September 8, 1911: Gage height, 0.73 foot; discharge, 9.8 second-feet.

Daily gage height, in feet, of Reeve Davis Consolidated Mining Co.'s ditch near Happy Camp, Cal., for 1911.

Day.	Sept.	Oct.	Day.	Sept.	Oct.	Day.	Sept.	Oct.
1	.....	0.75	11	0.75	0.80	21	0.72	0.70
2	.....	.....	12	.80	.....	22	.....	.....
3	.....	.80	13	.85	.85	23	.70	.70
4	.....	.....	14	.80	.....	24	.....	.75
5	.....	.80	15	.....	.90	25	.75	.78
6	.....	.....	16	.....	.....	26	.....	.....
7	.....	.75	17	.75	.80	27	.72	.40
8	0.75	.....	18	.....	.....	28	.....	.75
9	.70	.90	19	.75	.80	29	.72	.....
10	.....	.....	20	.....	.....	30	.....	.....
						31	.....	.78

NOTE.—Gage destroyed and no records available November and December.

SALMON RIVER AT SOMESBAR, CAL.

Location.—Below bridge, about 600 feet northeast of Somesbar post office, in SE. ¼ sec. 2, T. 13 N., R. 6 E., H. M., and about 1¾ miles above junction with Klamath River.

Records available.—September 17 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff in two sections on right bank about 900 feet below bridge.

Channel.—Bowlders and gravel.

Discharge measurements.—Made from bridge above gage or by wading.

The following measurement made by G. T. Peekema by wading one-half mile above gage:

September 18, 1911: Gage height, 3.55 feet; discharge, 193 second-feet.

Daily gage height, in feet, of Salmon River at Somesbar, Cal., for 1911.

[W. H. Hotelling, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	3.65	3.55	3.65	16	.....	3.75	4.7	3.8
2	.....	3.6	3.55	3.65	17	3.6	3.7	4.2	3.8
3	.....	3.6	3.5	3.65	18	3.55	3.65	3.9	3.8
4	.....	3.7	3.5	3.65	19	3.55	3.65	3.9	3.85
5	.....	3.65	3.5	3.7	20	3.5	3.6	3.9	3.8
6	.....	3.5	3.5	4.0	21	3.5	3.6	3.9	3.9
7	.....	3.5	3.5	4.0	22	3.5	3.6	3.85	3.9
8	.....	3.5	3.55	3.9	23	3.5	3.55	3.8	3.9
9	.....	3.8	3.8	3.9	24	3.5	3.55	3.8	3.9
10	.....	3.8	4.0	3.8	25	3.5	3.55	3.7	3.9
11	.....	3.75	3.8	3.8	26	3.55	3.55	3.7	3.9
12	.....	3.7	3.8	3.75	27	3.65	3.6	3.7	4.0
13	.....	3.65	3.8	3.7	28	3.6	3.6	3.7	4.2
14	.....	3.85	3.9	3.7	29	3.6	3.6	3.7	4.2
15	.....	3.85	5.0	3.7	30	3.6	3.6	3.65	4.0
					31	.....	3.6	.....	3.9

TRINITY RIVER NEAR TRINITY CENTER, CAL.

Location.—Below highway bridge, in the NE. ¼ sec. 16, T. 36 N., R. 7 W., in the Shasta National Forest, and 1½ miles southeast of Trinity Center. Coffee Creek enters 6 miles above, Hatchet Creek 1¾ miles above, East Fork three-fourths mile below, and Swift Creek 1¼ miles below the station.

Records available.—December 15, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff on right bank 650 feet below bridge. August 20, 1911, a low-water section was installed 400 feet below bridge to read same as original gage.

Channel.—Gravel; will shift during high water.

Discharge measurements.—Made from downstream side of bridge above gage and by wading.

Diversions.—Water is diverted from North Fork of Swift Creek for placer mining at Trinity Center. This water enters Trinity River above the station.

Accuracy.—Results are considered good except during the periods when there are no gage heights.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Trinity River near Trinity Center, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec. ft.*
April 6[a]	G. T. Peekema	5.05	2,010
May 19[a]	do	4.77	1,550
Aug. 20[b]	do	2.68	134
Oct. 2[c]	H. J. Tompkins	2.62	122

[a] Made from bridge 500 feet above gage.
[b] Made by wading 50 feet below old gage.
[c] Made by wading 350 feet above gage.

Daily gage height, in feet, of Trinity River near Trinity Center, Cal., for 1911.

[Fred Hansen and Ray W. Doney, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.0								2.45			
2		4.3								2.62		2.61
3	2.8		3.4			4.9						
4											2.61	
5	2.9	3.8						2.85				
6			4.4	5.05			3.7			2.60		
7	2.78	3.7										
8												
9	2.85		4.4			5.1						
10	2.95	3.6					3.5					
11								2.75	2.55			
12	2.9		4.5									
13		3.7					3.4					
14	3.05								2.60			2.68
15			4.2									
16	3.2	3.5				4.85						
17			4.4							2.60		
18	3.25											
19		3.3	4.55		4.8	4.7						
20					4.75			2.68				
21							3.2					
22	4.0	3.4	5.15									
23						4.25						
24			5.35								2.61	
25	3.8	3.4				4.0						2.70
26					4.9	4.05						2.60
27			4.9						2.65	2.61		
28	3.8	3.5					3.0					
29						3.9		2.50				2.70
30			5.1		4.85							
31	4.5											

Daily discharge, in second-feet, of Trinity River near Trinity Center, Cal., for 1910–11.

Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.
1910.		1910.		1910.		1910.		1910.		1910.	
1		6		11		16	383	21	330	26	261
2		7		12		17	365	22	330	27	250
3		8		13		18	348	23	330	28	240
4		9		14		19	330	24	307	29	221
5		10		15	482	20	330	25	284	30	202
										31	202

Daily discharge, in second-feet, of Trinity River near Trinity Center, Cal., for 1910–11—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	240	1,170	480	2,300	1,430	1,730	745	210	89	122	121	118
2	204	1,120	460	2,300	1,450	1,740	725	205	89	121	120	118
3	168	980	440	2,200	1,470	1,760	695	200	89	120	119	118
4	185	850	450	2,100	1,480	1,800	675	190	89	118	118	118
5	202	710	600	2,000	1,490	1,840	655	185	89	117	118	118
6	182	670	1,220	1,940	1,500	1,880	635	180	98	116	118	150
7	162	635	1,220	1,800	1,460	1,920	605	175	106	115	118	170
8	174	615	1,220	1,650	1,430	1,960	570	170	106	114	118	165
9	185	585	1,220	1,550	1,400	2,000	530	165	106	122	118	160
10	221	565	1,250	1,400	1,380	1,960	500	160	106	130	130	155
11	212	585	1,290	1,300	1,370	1,920	480	154	106	130	130	150
12	202	615	1,320	1,200	1,370	1,870	460	154	109	130	130	145
13	232	635	1,220	1,100	1,370	1,830	440	154	113	135	130	140
14	261	590	1,130	1,050	1,390	1,780	425	154	116	150	130	135
15	296	545	1,030	1,000	1,430	1,740	410	154	116	135	130	140
16	330	500	1,120	980	1,480	1,700	395	135	116	120	170	145
17	343	460	1,220	980	1,530	1,650	385	135	116	116	150	155
18	356	422	1,300	980	1,600	1,590	375	135	116	114	120	155
19	400	383	1,380	980	1,650	1,540	360	135	116	112	120	155
20	400	402	1,600	1,000	1,600	1,430	345	135	110	110	120	155
21	500	420	1,840	1,050	1,650	1,310	330	135	110	110	120	148
22	865	440	2 060	1,100	1,700	1,190	320	135	110	110	118	140
23	815	440	2,190	1,200	1,750	1,080	310	135	110	110	118	140
24	760	440	2,320	1,450	1,800	970	290	135	110	110	118	140
25	710	440	2,140	1,650	1,780	865	280	96	110	110	118	140
26	710	460	1,950	1,900	1,760	905	260	96	140	112	118	116
27	710	480	1,760	1,880	1,740	865	250	96	128	118	118	120
28	710	500	1,800	1,500	1,730	825	240	96	127	135	118	128
29	800	.....	1,800	1,400	1,720	785	235	96	125	130	118	140
30	950	.....	2,000	1,400	1,700	765	225	94	124	125	118	160
31	1,320	.....	2,200	.....	1,720	.....	220	91	.....	122	.....	170

NOTE.—Daily discharge 1910–11 determined from a well-defined rating curve. Discharge interpolated or estimated for days when the gage was not read. These values are based on hydrograph comparisons with the discharge at other near-by stations and are very roughly approximate. They are published as a matter of record only and should be used with caution.

Monthly discharge of Trinity River near Trinity Center, Cal., for 1910–11.

Month.	Mean discharge in second-feet.	Run-off (total in acre-feet.)	Accuracy.
1910.			
December 15–31	305	10,300	B.
1911.			
January	445	27,400	B.
February	595	33,000	B.
March	1,390	85,500	B.
April	1,480	88,100	C.
May	1,560	95,900	C.
June	1,510	89,800	C.
July	431	26,500	C.
August	145	8,920	C.
September	110	6,550	C.
October	121	7,440	C.
November	124	7,380	C.
December	142	8,730	C.
The year	670	485,000	

TRINITY RIVER AT LEWISTON, CAL.

Location.—At highway bridge at Lewiston, in the NE. ¼ sec. 19, T. 33 N., R. 8 W., and about 9 miles below Stewarts Fork. Indian Creek enters 6 miles below the station.

Records available.—August 28 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff in two sections on left bank at bridge.
Channel.—Small bowlders and gravel; fairly permanent.
Discharge measurements.—Made from bridge at gage and by wading.
Diversions.—Water is diverted for use for irrigation, placer mining, and power development above station.
Accuracy.—Results are good.

Discharge measurements of Trinity River at Lewiston, Cal., in 1910–11.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1910.			
Dec. 19[a]	H. D. McGlashan	3.62	782
1911.			
Mar. 21[a]	G. T. Peekema	6.38	4,330
May 18[a]	do	6.18	3,540
Aug. 28[b]	do	2.31	162
Sept. 28[c]	H. J. Tompkins	2.50	183

[a] Made from downstream side of bridge 25 feet below gage.
[b] Made by wading 1,500 feet below gage.
[c] Made by wading 300 feet above gage.

Daily gage height, in feet, and discharge, in second-feet, of Trinity River at Lewiston, Cal., for 1911.

[Wendell W. Phillips, observer.]

Day.	August.		September.		October.		November.		December.	
	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.	Gage height.	Discharge.
1	.....	.....	2.28	144	2.43	178	2.47	188	2.44	180
2	.....	.....	2.30	148	2.45	182	2.47	188	2.44	180
3	.....	.....	2.29	146	2.49	192	2.45	182	2.48	190
4	.....	.....	2.30	148	2.45	182	2.46	185	2.49	192
5	.....	.....	2.40	170	2.45	182	2.45	182	2.48	190
6	.....	.....	2.32	152	2.44	180	2.44	180	2.68	253
7	.....	.....	2.34	157	2.41	172	2.49	192	2.78	288
8	.....	.....	2.34	157	2.40	170	2.49	192	2.71	264
9	.....	.....	2.34	157	2.58	219	2.50	195	2.62	232
10	.....	.....	2.35	159	2.59	222	2.49	192	2.65	242
11	.....	.....	2.39	168	2.53	204	2.59	222	2.59	222
12	.....	.....	2.36	161	2.51	198	2.52	201	2.53	204
13	.....	.....	2.38	166	2.51	198	2.53	204	2.51	198
14	.....	.....	2.48	190	2.71	264	2.55	210	2.49	192
15	.....	.....	2.39	168	2.61	228	2.53	204	2.51	198
16	.....	.....	2.36	161	2.52	201	2.82	303	2.53	204
17	.....	.....	2.35	159	2.52	201	2.80	295	2.59	222
18	.....	.....	2.40	170	2.50	195	2.55	210	2.56	213
19	.....	.....	2.35	159	2.51	198	2.58	219	2.54	207
20	.....	.....	2.33	155	2.45	182	2.59	222	2.53	204
21	.....	.....	2.32	152	2.42	175	2.60	225	2.53	204
22	.....	.....	2.32	152	2.41	172	2.58	219	2.49	192
23	.....	.....	2.32	152	2.44	180	2.57	216	2.51	198
24	.....	.....	2.31	150	2.44	180	2.59	222	2.51	198
25	.....	.....	2.32	152	2.46	185	2.58	219	2.49	192
26	.....	.....	2.53	204	2.48	190	2.59	222	2.50	195
27	.....	.....	2.49	192	2.59	222	2.58	219	2.50	195
28	2.30	148	2.49	192	2.61	228	2.54	207	2.55	210
29	2.30	148	2.46	185	2.58	219	2.54	207	2.64	239
30	2.29	146	2.46	185	2.52	201	2.48	190	2.71	264
31	2.29	146	.....	.....	2.47	188	.....	.....	2.75	278

NOTE.—Daily discharge determined from a fairly well defined rating curve.

Monthly discharge of Trinity River at Lewiston, Cal., for 1911.

Month.	Discharge in second-feet.			Run-off (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
September	204	144	164	9,760	B.
October	264	170	196	12,100	B.
November	303	180	210	12,500	B.
December	288	180	214	13,200	B.

TRINITY RIVER NEAR CHINA FLAT, CAL.

Location.—At suspension footbridge in sec. 15, T. 6 N., R. 5 E., Humboldt meridian, about 2 miles above junction with South Fork, and 8 miles above China Flat.

Records available.—October 11 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Staff in three sections bolted to rock ledge on left bank, 40 feet above bridge.

Channel.—Bowlders and gravel partly covered with silt—the débris of placer mining.

Discharge measurements.—Made from bridge below gage.

Diversions.—A small amount of water is diverted above the station for use in irrigation, power development, and placer mining.

The following discharge measurement was made by E. O. Christiansen: December 31, 1911: Gage height, 5.0 feet; discharge, 588 second-feet.

Daily gage height, in feet, of Trinity River near China Flat, Cal., for 1911.

[Nels Anderburg, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	4.80	5.00	11	.....	5.12	5.10	21	4.85	5.20	5.15
2	.....	4.80	4.95	12	4.90	5.00	5.08	22	4.82	5.20	5.00
3	.....	4.80	4.95	13	4.90	5.00	5.00	23	4.80	5.12	5.00
4	.....	4.80	4.95	14	4.90	5.00	5.00	24	4.78	5.02	5.08
5	.....	4.78	4.95	15	5.00	5.38	5.05	25	4.78	5.00	5.00
6	.....	4.78	5.10	16	5.00	5.90	5.20	26	4.78	5.00	4.98
7	.....	4.78	5.30	17	4.94	5.68	5.20	27	4.80	5.00	5.20
8	.....	4.78	5.40	18	4.90	5.45	5.20	28	4.80	5.00	5.25
9	.....	4.80	5.30	19	4.90	5.30	5.10	29	4.85	5.00	5.15
10	.....	5.22	5.15	20	4.85	5.28	5.08	30	4.85	5.00	5.10
								31	4.82	.....	5.00

TRINITY RIVER AT HOOPA, CAL.

Location.—At Hoopa Indian Agency, in the NW. ¼ sec. 25, T. 8 N., R. 4 E., Humboldt meridian, about 1 mile above Hoopa Ferry, and about 11 miles above the junction with Klamath River.

Records available.—September 3 to December 31, 1911.

Drainage area.—Not measured.

Gage.—Staff in three sections on left bank 800 feet above mouth of Supply Creek.

Channel.—Sand and gravel; appears permanent.

Discharge measurements.—Made from ferry 1 mile below gage. As Supply Creek enters between gage and ferry, it is necessary to deduct discharge of this stream from measurements made at ferry to ascertain flow at gage.

Discharge measurements of Trinity River at Hoopa, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 8	E. O. Christiansen	4.70	492
Dec. 30	do	5.30	812

NOTE.—Measurements were made ¼ and 1½ miles, respectively, below the gage and below mouth of Supply Creek. This creek was measured and discharge deducted to give discharge past gage.
See miscellaneous measurements for discharge of Supply Creek.

Daily gage height, in feet, of Trinity River at Hoopa, Cal., for 1911.

[James W. Carroll and Julius Marshall, observers.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	4.65	4.71	4.92	16	4.58	4.98	6.22	5.11
2	.....	4.62	4.70	4.90	17	4.55	4.88	5.92	5.38
3	4.40	4.68	4.70	4.90	18	4.51	4.82	5.68	5.26
4	4.44	4.72	4.70	4.92	19	4.49	4.80	5.60	5.20
5	4.49	4.74	4.70	5.08	20	4.49	4.76	5.35	5.20
6	4.50	4.70	4.70	5.28	21	4.48	4.71	5.19	5.12
7	4.52	4.70	4.70	5.38	22	4.46	4.70	5.19	5.00
8	4.54	4.69	4.71	5.28	23	4.44	4.70	5.12	5.11
9	4.52	4.75	4.82	5.20	24	4.42	4.70	5.05	5.18
10	4.50	4.85	5.32	5.16	25	4.49	4.70	5.00	5.06
11	4.51	4.91	5.30	5.04	26	4.60	4.70	5.00	5.05
12	4.56	4.89	5.12	5.02	27	4.65	4.70	5.00	5.40
13	4.60	4.84	5.18	5.00	28	4.70	4.72	4.98	5.46
14	4.62	4.91	5.15	5.00	29	4.69	4.78	4.95	5.35
15	4.61	4.98	5.90	5.00	30	4.66	4.74	4.95	5.30
					31	.....	4.72	.....	5.26

COFFEE CREEK AT COFFEE, CAL.

Location.—At private highway bridge at Coffee, in the NW. ¼ sec. 4, T. 37 N., R. 8 W., in the Shasta National Forest, 5 miles above the junction with Trinity River. Boulder Creek enters 400 feet above and Little Boulder Creek 1¼ miles below the station.

Records available.—December 16, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened near upstream end of bridge pier near right bank.

Channel.—Gravel and bowlders; appears permanent.

Discharge measurements.—Made from downstream side of bridge at gage and by wading.

Artificial control.—From April to July, inclusive, and occasionally throughout the remainder of the year two dams with automatic or "self-shooting" gates are operated about 10 miles above the station. The Nash mine operates a dam having a working capacity of about 125 acre-feet. The Holland mine, on the East Fork, operates a dam having a working capacity of about 40 acre-feet. At the beginning of the season, in April, these dams fill and "shoot" about once an hour; at the end of the season, in July, once in 20 or 24 hours. During high water these "floods" are hardly perceptible, but late in the season their effect is pronounced. Gage readings are made only when the flow is normal.

Accuracy.—The gage-height record, on account of the operation of the self-shooting dam, is subject to some error. Otherwise the results are good.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Coffee Creek at Coffee, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 20[a]	G. T. Peekema	5.20	739
Aug. 18[b]	do	3.54	62
Oct. 3[c]	H. J. Tompkins	3.40	41

[a] Last part of measurement made during flow from one of the "shooters."
[b] Made by wading 900 feet below gage.
[c] Made by wading 25 feet below gage.

Daily gage height, in feet, of Coffee Creek at Coffee, Cal. for 1911.

[F. H. Williams, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.75	4.40	4.00	5.5	5.5	5.8	4.9	3.8	3.35	3.42	3.48	3.37
2	3.80	4.30	4.10	5.4	5.5	5.9	4.9	3.75	3.35	3.42	3.48	3.38
3	3.80	4.20	4.10	5.4	5.6	5.9	4.8	3.7	3.35	4.00	3.50	3.38
4	3.75	4.10	4.05	5.4	5.6	5.5	4.7	3.7	3.35	3.42	3.50	3.40
5	3.73	4.10	4.15	5.4	5.6	5.5	4.65	3.65	3.35	3.42	3.50	3.40
6	3.72	4.00	4.70	5.3	5.6	5.5	4.6	3.6	3.35	3.41	3.52	3.40
7	3.75	3.95	4.60	5.4	5.5	5.55	4.6	3.6	3.37	3.42	3.52	3.40
8	3.75	3.90	4.50	5.3	5.5	5.4	4.55	3.6	3.37	3.42	3.52	3.40
9	3.78	3.93	4.30	5.3	5.4	5.6	4.55	3.55	3.38	3.42	3.52	3.42
10	3.73	3.95	4.25	5.2	5.5	5.6	4.5	3.55	3.38	3.42	3.52	3.42
11	3.70	3.97	4.20	.....	5.5	5.7	4.5	3.55	3.38	3.42	3.52	3.45
12	3.68	4.00	4.15	5.0	5.4	5.6	4.5	3.55	3.38	3.42	3.55	3.45
13	3.67	4.00	4.15	4.9	5.4	5.7	4.45	3.55	3.38	3.42	3.55	3.45
14	3.65	4.00	4.20	4.9	5.4	5.6	4.4	3.55	3.38	3.42	3.58	3.45
15	3.64	3.97	4.20	4.9	5.3	5.8	4.4	3.55	3.38	3.42	3.58	3.45
16	3.63	3.95	4.30	4.9	5.3	5.8	4.35	3.55	3.38	3.42	3.60	3.45
17	3.65	3.93	4.45	5.1	5.3	5.5	4.35	3.50	3.39	3.42	3.58	3.45
18	3.70	3.93	4.50	5.1	5.2	5.5	4.3	3.50	3.39	3.43	3.55	3.45
19	3.85	3.92	4.60	5.1	5.3	5.7	4.3	3.50	3.40	3.43	3.50	3.47
20	3.85	3.91	4.66	5.2	5.25	5.6	4.25	3.50	3.40	3.44	3.50	3.47
21	3.82	3.92	4.80	5.2	5.3	5.5	4.2	3.48	3.40	3.44	3.48	3.47
22	3.80	3.95	4.90	5.2	5.4	5.4	4.2	3.48	3.42	3.44	3.48	3.48
23	3.80	3.96	4.95	5.4	5.5	5.2	4.1	3.48	3.42	3.44	3.45	3.48
24	3.80	4.00	5.00	5.6	5.6	5.2	4.05	3.47	3.42	3.44	3.42	.....
25	3.85	4.00	4.95	5.6	5.5	5.1	4.05	3.47	3.42	3.45	3.40	.....
26	3.87	4.07	5.00	5.8	5.5	5.05	4.0	3.46	3.42	3.45	3.38	3.50
27	3.90	4.05	5.00	5.5	5.5	5.1	4.0	3.45	3.42	3.45	3.38	3.50
28	3.90	4.00	5.00	5.5	5.6	5.05	3.95	3.40	3.42	3.46	3.35	3.50
29	3.98	.....	4.95	5.5	5.6	5.05	3.9	3.40	3.42	3.46	3.35	3.50
30	4.20	.....	5.05	5.6	5.7	5.0	3.9	3.38	3.42	3.48	3.35	3.50
31	4.60	.....	5.30	.....	5.8	.....	3.85	3.35	.....	3.48	.....	3.50

NOTE.—Gage heights affected by action of dams (see description). Gage height Oct. 3 too high, account of discharge from self-shooting dam.

Daily discharge, in second-feet, of Coffee Creek at Coffee, Cal., for 1910–11.

Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.
1910.		1910.		1910.		1910.		1910.		1910.	
1	.....	6	.....	11	.....	16	180	21	111	26	104
2	.....	7	.....	12	.....	17	174	22	107	27	100
3	.....	8	.....	13	.....	18	174	23	106	28	97
4	.....	9	.....	14	.....	19	133	24	106	29	93
5	.....	10	.....	15	.....	20	115	25	104	30	90
										31	86

Daily discharge, in second-feet, of Coffee Creek at Coffee, Cal., for 1910–11—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	86	258	133	1,000	1,000	1,290	510	93	40	46	52	41
2	93	222	159	910	1,000	1,390	510	86	40	46	52	42
3	93	189	159	910	1,100	1,390	445	78	40	46	54	42
4	86	159	146	910	1,100	1,000	390	78	40	46	54	44
5	82	159	174	910	1,100	1,000	365	72	40	46	54	44
6	81	133	390	820	1,100	1,000	340	65	40	45	56	44
7	86	122	340	910	1,000	1,050	340	65	41	46	56	44
8	86	111	297	820	1,000	910	318	65	41	46	56	44
9	90	118	222	820	910	1,100	318	60	42	46	56	46
10	82	122	206	735	1,000	1,100	297	60	42	46	56	46
11	78	126	189	658	1,000	1,190	297	60	42	46	56	49
12	75	133	174	580	910	1,100	297	60	42	46	60	49
13	74	133	174	510	910	1,190	278	60	42	46	60	49
14	72	133	189	510	910	1,100	258	60	42	46	63	49
15	70	126	189	510	820	1,290	258	60	42	46	63	49
16	69	122	222	510	820	1,290	240	60	42	46	65	49
17	72	118	278	655	820	1,000	240	54	43	46	63	49
18	78	118	297	655	735	1,000	222	54	43	47	60	49
19	102	115	340	655	820	1,190	222	54	44	47	54	51
20	102	113	370	735	778	1,100	205	54	44	48	54	51
21	97	115	445	735	820	1,000	189	52	44	48	52	51
22	93	122	510	735	910	910	189	52	46	48	52	52
23	93	124	545	910	1,000	735	159	52	46	48	49	52
24	93	133	580	1,100	1,100	735	146	51	46	48	46	53
25	102	133	545	1,100	1,000	655	146	51	46	49	44	53
26	106	151	580	1,290	1,000	618	133	50	46	49	42	54
27	111	146	580	1,000	1,000	655	133	49	46	49	42	54
28	111	133	580	1,000	1,100	618	122	44	46	50	40	54
29	129	.....	545	1,000	1,100	618	111	44	46	50	40	54
30	189	.....	618	1,100	1,190	580	111	42	46	52	40	54
31	340	.....	820	.....	1,290	.....	102	40	.....	52	.....	54

NOTE.—Daily discharge determined from a well-defined rating curve. Discharge interpolated Apr. 11, Oct. 3, and Dec. 24–25.

Monthly discharge of Coffee Creek at Coffee, Cal., for 1910–11.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1910.					
December 16–31	180	86	118	3,750	B.
1911.					
January	340	69	101	6,210	B.
February	258	111	139	7,720	B.
March	820	133	355	21,800	B.
April	1,290	510	823	49,000	B.
May	1,290	735	979	60,200	B.
June	1,390	580	993	59,100	B.
July	510	102	255	15,700	B.
August	93	40	58.9	3,620	B.
September	46	40	43.0	2,560	B.
October	52	45	47.3	2,910	B.
November	65	40	53.0	3,150	B.
December	54	41	48.9	3,010	B.
The year	1,390	40	324	235,000	

EAST FORK OF TRINITY RIVER NEAR TRINITY CENTER, CAL.

Location.—At highway bridge 2¼ miles southeast of Trinity Center, in the SW. ¼ sec. 15, T. 36 N., R. 7 W., in the Shasta National Forest, one-fourth mile above junction with Trinity River.

Records available.—December 15, 1910, to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff on downstream end of left abutment of bridge.
Channel.—Gravel and small bowlders; appears permanent. The section at the bridge is poor for measurements at low stages because of ponded water.
Discharge measurements.—Made from downstream side of bridge or by wading.
Diversions.—About 400 acres are irrigated from this stream. The principal diversion is the Trinity Farm & Cattle Co.'s canal, which heads about 4 miles above the station. Some water is also used for mining.
Accuracy.—Gage record incomplete; otherwise record is good.
Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of East Fork of Trinity River near Trinity Center, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 5	G. T. Peekema	6.25	1,160
May 19	do	5.55	701
Aug. 20[a]	do	3.44	6.7
Oct. 2[b]	H. J. Tompkins	3.55	12

[a] Made by wading 100 feet above gage. [b] Made by wading 200 feet below gage.

Daily gage height, in feet, of East Fork of Trinity River near Trinity Center, Cal., for 1911.

[Fred Hansen and R. W. Doney, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.0	6.3							3.4			
2										3.55		3.6
3	4.1		5.7			5.7						
4								3.5			3.61	
5	4.05	5.8		6.25								
6			5.6		5.95		4.1			3.6		
7	4.0	5.75			5.9							
8					5.8							
9	4.05		5.4		5.6	5.4						
10	4.08	5.5					4.05					
11								3.45	3.5			
12	3.95		5.3									
13		5.7					3.95					
14	4.15								3.5			3.61
15			5.25		5.6	5.2						
16	4.2	5.4										
17	4.3		5.5							3.6		
18												
19		5.3	5.65		5.55	4.8						
20					5.5			3.44				
21							3.8	3.4				
22	4.2	5.0	5.9									
23						4.6						
24		5.4	6.2								3.6	
25	4.3											
26					5.8	4.45						
27		5.55	5.8						3.6	3.62		
28	4.9						3.7	3.4				
29				5.7		4.3						
30					5.8							
31	6.4		6.1									

Daily discharge, in second-feet, of East Fork of Trinity River near Trinity Center, Cal., for 1910–11.

Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.
1910.		1910.		1910.		1910.		1910.		1910.	
1		6		11		16	194	21	68	26	40
2		7		12		17	145	22	64	27	40
3		8		13		18	117	23	60	28	40
4		9		14		19	89	24	53	29	43
5		10		15	243	20	78	25	47	30	46
										31	40

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911.												
1	40	1,270	715	1,200	830	810	79	11	6	11	14	13
2	46	1,160	745	1,300	855	790	73	10	6	11	14	13
3	52	1,060	770	1,200	880	770	68	9	6	12	14	13
4	49	950	720	1,200	905	735	62	9	6	12	14	13
5	46	845	680	1,220	935	700	57	9	6	12	15	13
6	43	826	630	1,170	965	665	52	9	8	13	15	13
7	40	808	610	1,080	925	635	50	9	9	13	15	13
8	43	750	585	1,000	845	600	49	8	9	13	15	14
9	46	690	565	940	700	565	48	8	9	13	15	14
10	50	630	545	870	700	545	46	8	9	13	15	14
11	43	680	525	800	700	525	43	8	9	13	15	14
12	36	720	505	750	700	505	39	8	9	13	15	14
13	48	770	496	690	700	490	36	8	9	13	15	14
14	60	700	487	640	700	470	34	8	9	13	15	14
15	64	630	478	600	700	450	33	8	9	13	15	14
16	68	565	705	590	690	400	31	7	9	13	15	14
17	89	545	630	580	680	350	30	7	9	13	15	14
18	85	525	680	580	675	305	29	7	9	13	15	14
19	81	505	735	600	665	255	27	7	9	13	15	14
20	76	450	795	620	630	235	26	7	9	13	15	14
21	72	400	865	640	700	220	24	6	13	13	15	15
22	68	345	925	670	760	200	23	6	13	13	15	15
23	75	455	1,050	730	830	180	22	6	13	14	15	15
24	82	565	1,180	800	900	163	21	6	13	14	13	15
25	89	600	1,070	900	870	147	21	6	13	14	13	15
26	160	630	960	1,000	845	130	20	6	13	14	13	15
27	230	665	845	850	845	116	19	6	13	14	13	15
28	300	690	910	780	845	103	18	6	13	14	13	15
29	500	.....	970	770	845	89	16	6	12	14	13	15
30	800	.....	1,030	800	845	84	14	6	12	14	13	15
31	1,360	.....	1,090	.....	825	.....	12	6	.....	14	.....	15

NOTE.—Daily discharge 1910–11 determined from a well-defined rating curve. Discharge interpolated or estimated for days when the gage was not read. These values are based on hydrograph comparisons with the discharge at other nearby stations and are very roughly approximate. They are published as a matter of record only and should be used with caution.

Monthly discharge of East Fork of Trinity River near Trinity Center, Cal., for 1910–11.

Month.	Mean discharge in second-feet.	Run-off (total in acre-feet).	Accuracy.
1910.			
December 15–31	82.8	2,790	B.
1911.			
January	156	9,590	C.
February	694	38,500	C.
March	758	46,600	C.
April	852	50,700	D.
May	790	48,600	C.
June	408	24,300	C.
July	36.2	2,230	C.
August	7.5	461	C.
September	9.7	577	C.
October	13.1	806	C.
November	14.4	857	C.
December	14.1	867	C.
The year	309	224,000	

SWIFT CREEK NEAR TRINITY CENTER, CAL.

Location.—One-fourth mile above junction with North Fork of Swift Creek in E. ½ sec. 13, T. 36 N., R. 8 W., in the Shasta National Forest, about 2½ miles southwest of Trinity Center.

Records available.—December 17, 1910, to December 31, 1911.

Drainage area.—Not measured.

Gage.—Vertical staff fastened to a cedar tree on left bank 100 feet below foot log. August 19, 1911, a low-water section was installed at foot log to read same as original gage but at different datum.

Channel.—Bowlders; rough; probably permanent.

Discharge measurements.—Made from foot log or by wading.

Accuracy.—Individual measurements are subject to considerable error as the bed of the stream is rough. Rating curve averages all measurements and will give fair results. Gage-height record is incomplete.

Cooperation.—Gage-height record and discharge measurements furnished by United States Forest Service.

Discharge measurements of Swift Creek near Trinity Center, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 6[a]	G. T. Peekema	2.59	297
May 19[a]	do	2.52	281
Aug. 19[b]	do	[d] 1.66	23
Oct. 1[c]	H. J. Tompkins	[e] 1.50	16

[a] Made from foot log. Section poor.
[b] Made by wading 1,000 feet above gage.
[c] Made by wading 200 feet above new low-water section set Aug. 19.
[d] Both gages read same.
[e] Gage at footlog.

Daily gage height, in feet, of Swift Creek near Trinity Center, Cal., for 1911.

[Fred Hansen and R. W. Doney, observers.]

Day.	Jan.	Feb.	Mar	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	1.6									1.5	
1											
3	1.5										
4	1.6				2.9						1.5
5					3.0			1.65			
6	1.45			2.6					1.55		
7											
8					2.8		2.1				
9	1.45					2.8				1.52	
10											
11											
12											
13									1.5		
14						3.0					
15	1.65										
16											
17									1.5		
18	1.78						2.05				
19					2.5			1.66			
20					2.5						
21											
22						2.45					
23									1.55		
24					2.9		1.8	1.6			
25											1.5
26											
27					2.7						
28										1.5	
29											
30							1.7				
31											

NOTE.—Gage heights Aug. 19 to Nov. 25, referred to gage at slightly different datum from those prior to Aug. 19.

Daily discharge, in second-feet, of Swift Creek near Trinity Center, Cal., for 1910–11.

Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.	Day.	Dec.
1910.		1910.		1910.		1910.		1910.		1910.	
1		6		11		16		21	77	26	42
2		7		12		17	114	22	65	27	31
3		8		13		18	106	23	65	28	31
4		9		14		19	97	24	65	29	31
5		10		15		20	89	25	54	30	28
										31	25

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911.								
1	19			350	450	610	172	28
2	14			340	450	670	164	27
3	10			330	450	670	156	26
4	19			330	460	350	148	25
5	13			320	520	350	140	25
6	7.5			307	480	370	133	25
7	7			300	440	400	125	25
8	7			300	405	300	117	25
9	7.5			280	370	405	116	25
10	10			270	400	460	114	25
11	13			240	400	520	113	25
12	16			210	380	520	111	25
13	19			180	360	520	110	26
14	22			180	350	520	109	26
15	25			180	330	600	107	26
16	31			180	310	600	106	26
17	37			210	300	450	104	26
18	43			240	280	450	103	26
19				250	263	550	94	26
20				250	263	450	85	
21				260	310	300	75	
22				270	360	242	65	
23				350	410	234	55	
24				420	460	226	46	
25				500	360	219	43	
26				600	360	211	40	
27				450	354	203	37	
28				450	400	195	35	
29				450	450	187	33	
30				450	510	179	31	
31					560		29	

NOTE.—Daily discharge 1910–11 based on a fairly well defined rating curve. Discharge interpolated or estimated for days when the gage was not read. These values are based on hydrograph comparisons with the discharge at other nearby stations and are very roughly approximate.

Monthly discharge of Swift Creek near Trinity Center, Cal., for 1910–11.

Month.	Mean discharge in second-feet.	Run-off (total in acre-feet).	Accuracy.
1910.			
December 17–31	61.3	1,820	C.
1911.			
January	30	1,840	D.
February	45	2,500	D.
March	120	7,380	D.
April	315	18,700	B.
May	393	24,200	B.
June	399	23,700	B.
July	94.1	5,790	C.
August 1–19	25.7	969	C.
The period		85,100	

NOTE.—Mean discharge January, February, and March determined by comparison with discharge of Coffee Creek at Coffee. Mean discharge December, estimated.

NORTH FORK OF TRINITY RIVER AT HELENA, CAL.

Location.—Just above highway bridge at Helena, in the sec. 28, T. 34 N., R. 11 W., about one-fourth mile above junction with Trinity River.
Records available.—August 23 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff fastened to an alder tree on left bank, 150 feet above bridge.
Channel.—Small bowlders and gravel.
Discharge measurements.—Made from bridge or by wading.

Discharge measurements of North Fork of Trinity River at Helena, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Aug. 23[a]	G. T. Peekema	1.40	38
Sept. 29[b]	H. J. Tompkins	1.40	31

[a] Made by wading. [b] Made by wading 500 feet below gage at wagon ford.

Daily gage height, in feet, of North Fork of Trinity River at Helena, Cal., for 1911.

[H. L. Knowles, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.3	1.4	1.4	1.45	16	.....	1.35	1.5	1.55	1.50
2	.....	1.25	1.4	1.4	1.45	17	.....	1.35	1.45	2.00	1.50
3	.....	1.25	1.4	1.4	1.43	18	.....	1.35	1.4	1.80	1.50
4	.....	1.25	1.4	1.4	1.43	19	.....	1.35	1.4	1.65	1.50
5	.....	1.25	1.4	1.4	1.43	20	.....	1.35	1.4	1.50	1.50
6	.....	1.25	1.4	1.4	1.58	21	.....	1.35	1.4	1.48	1.50
7	.....	1.45	1.4	1.4	1.70	22	.....	1.35	1.4	1.45	1.50
8	.....	1.4	1.5	1.4	1.65	23	1.4	1.35	1.4	1.45	1.50
9	.....	1.4	1.5	1.4	1.60	24	1.4	1.35	1.4	1.45	1.50
10	.....	1.4	1.5	1.55	1.58	25	1.4	1.45	1.4	1.45	1.50
11	.....	1.4	1.5	1.48	1.55	26	1.4	1.45	1.4	1.45	1.50
12	.....	1.35	1.5	1.45	1.50	27	1.35	1.4	1.4	1.45	1.50
13	.....	1.35	1.55	1.45	1.50	28	1.35	1.4	1.4	1.45	1.55
14	.....	1.35	1.55	1.45	1.50	29	1.35	1.4	1.4	1.45	1.55
15	.....	1.35	1.55	1.45	1.50	30	1.3	1.4	1.4	1.45	1.50
						31	1.3	.....	1.4	.....	1.50

SOUTH FORK OF TRINITY RIVER NEAR CHINA FLAT, CAL.

Location.—At suspension footbridge, in sec. 17, T. 6 N., R. 5 E., Humboldt meridian, one-fourth mile above junction with Trinity River and about 6 miles above China Flat.
Records available.—October 12 to December 31, 1911.
Drainage area.—Not measured.
Gage.—Vertical staff bolted to rock ledge on right bank, 30 feet above bridge.
Channel.—Bowlders and gravel; appears permanent.
Discharge measurements.—Made from bridge below gage and by wading.

Discharge measurements of South Fork of Trinity River near China Flat, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 12[a]	E. O. Christiansen	3.84	102
Dec. 31[b]	.....do	4.16	202

[a] Made by wading 600 feet below gage. [b] Made by wading 400 feet below gage.

Daily gage height, in feet, of South Fork of Trinity River near China Flat, Cal., for 1911.

[Nels Anderberg, observer.]

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	3.75	3.85	11	.....	4.10	3.92	21	3.78	4.00	4.00
2	.....	3.75	3.85	12	3.85	4.00	3.90	22	3.78	3.95	4.00
3	.....	3.75	3.85	13	3.85	4.00	3.90	23	3.75	3.92	4.00
4	.....	3.75	3.85	14	3.85	4.00	3.90	24	3.75	3.90	4.02
5	.....	3.75	3.85	15	3.85	4.12	3.88	25	3.75	3.90	4.00
6	.....	3.75	4.00	16	3.85	4.48	4.00	26	3.75	3.85	3.98
7	.....	3.75	4.08	17	3.85	4.30	4.15	27	3.75	3.85	4.20
8	.....	3.75	4.08	18	3.85	4.20	4.08	28	3.75	3.85	4.25
9	.....	3.80	4.00	19	3.80	4.00	4.02	29	3.75	3.85	4.20
10	.....	4.00	3.95	20	3.80	4.00	4.00	30	3.75	3.85	4.12
								31	3.75	.....	4.15

SMITH RIVER BASIN.

MIDDLE FORK OF SMITH RIVER NEAR CRESCENT CITY, CAL.

Location.—At highway bridge in the S. ½ sec. 20, T. 17 N., R. 2 E., Humboldt meridian, 800 feet above junction of North and Middle forks, one-eighth mile east of Gasquet and 14 miles northeast of Crescent City.

Records available.—September 8 to December 31, 1911.

Drainage area.—146 square miles.

Gage.—Chain gage attached to downstream guard rail of bridge. Length of chain, 47.61 feet.

Channel.—Bowlders and gravel; rough; section probably permanent.

Discharge measurements.—Made from bridge at gage and by wading.

Cooperation.—Gage-height record furnished by United States Forest Service.

Discharge measurements of Middle Fork of Smith River near Crescent City, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 8	E. O. Christiansen	4.10	70
Dec. 5	.....do	4.49	131

NOTE.—Measurements made by wading 50 feet below gage.

Daily gage height, in feet, of Middle Fork of Smith River near Crescent City, Cal., for 1911.

[A. W. Lewis, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	4.02	4.40	16	4.12	.....	.....	.....
2	.....	.....	.....	4.40	17	4.10	.....	.....	.....
3	.....	4.10	.....	4.38	18	.....	.....	.....	.....
4	.....	.....	4.00	4.35	19	.....	.....	.....	.....
5	.....	4.15	.....	4.65	20	.....	.....	.....	.....
6	.....	.....	.....	5.28	21	.....	.....	.....	.....
7	.....	4.08	.....	5.08	22	.....	.....	.....	4.90
8	4.10	.....	.....	4.86	23	.....	4.05	.....	5.27
9	4.10	4.45	.....	4.73	24	.....	.....	.....	5.10
10	4.10	.....	5.00	4.66	25	4.08	4.05	.....	.....
11	4.10	.....	4.52	4.58	26	4.15	.....	.....	4.95
12	4.15	.....	.....	4.54	27	4.10	.....	.....	5.52
13	4.25	4.42	.....	4.51	28	4.10	4.05	.....	.....
14	4.12	4.50	.....	.....	29	4.08	.....	.....	.....
15	4.12	.....	8.60	.....	30	4.05	.....	4.42	.....
					31	.....	.....	.....	.....

NOTE.—Nov. 15, gage height estimated from marks on gage.

NORTH FORK OF SMITH RIVER NEAR CRESCENT CITY, CAL.

Location.—Half a mile northeast of Gasquet, in the NE. ¼ sec. 20, T. 17 N., R. 2 E., Humboldt meridian, half a mile above junction of North and Middle forks and about 15 miles northeast of Crescent City.

Records available.—September 8 to December 31, 1911.

Drainage area.—81 square miles.

Gage.—Staff in four sections on left bank, installed December 3, 1911. Original gage, which was destroyed by high water on November 15, was located one-eighth mile below present gage. Original datum has not been maintained.

Channel.—Bowlders and gravel and is rough. Section is probably permanent.

Discharge measurements.—Made from car and cable at gage.

Cooperation.—Gage-height record furnished by United States Forest Service.

Discharge measurements of North Fork of Smith River near Crescent City, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 8[a]	E. O. Christiansen	3.60	73
Dec. 6[b]	do	12.82	1,440

[a] Made from foot log; reference to original gage.
[b] Made from cable; reference to new gage installed Dec. 3.

Daily gage height, in feet, of North Fork of Smith River near Crescent City, Cal., for 1911.

[A. W. Lewis, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1			3.50		16	3.65			
2					17	3.58			
3		3.60		8.90	18				
4			3.45	8.80	19				
5		3.62		9.00	20				
6				12.90	21				
7		3.52		12.00	22				11.45
8	3.60			11.50	23		3.52		12.28
9	3.60	4.25		11.20	24				12.00
10	3.60		6.10	11.00	25	3.52	3.52		
11	3.62		5.10	10.88	26	3.62			
12	3.69			10.75	27	3.68			12.55
13	3.75	4.30		10.68	28	3.55	3.50		
14	3.62	4.40			29	3.52			
15	3.62				30	3.52			
					31				

NOTE.—Readings Sept. 8 to Nov. 11 and Dec. 3 to 27 refer to gages at different datums (see description).

SOUTH FORK OF SMITH RIVER NEAR CRESCENT CITY, CAL.

Location.—Just below highway bridge, in the SW. ¼ NE. ¼ sec. 10, T. 16 N., R. 1 E., Humboldt meridian, one-eighth mile above mouth and 9 miles northeast of Crescent City.

Records available.—September 9 to December 31, 1911.

Drainage area.—290 square miles.

Gage.—Staff in four sections on left bank 200 feet below bridge.

Channel.—Bowlders and gravel; may shift during high water.

Discharge measurements.—Made from car and cable 400 feet below gage and by wading.

Discharge measurements of South Fork of Smith River near Crescent City, Cal., in 1911.

Date.	Hydrographer.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 9[a]	E. O. Christiansen	5.41	154
Dec. 13[b]	....do	6.21	469

[a] Made by wading 300 feet below station. [b] Made from cable.

Daily gage height, in feet, of South Fork of Smith River near Crescent City, Cal., for 1911.

[Ruby Christensen, observer.]

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	.....	5.45	5.50	6.00	16	5.40	5.74	5.42	6.66
2	.....	5.48	5.52	5.94	17	5.30	6.40	5.64	6.89
3	.....	5.45	5.58	6.00	18	5.40	6.30	6.85	6.84
4	.....	5.50	5.55	5.99	19	5.41	6.25	7.38	6.96
5	.....	5.50	5.54	6.10	20	5.42	6.20	7.35	7.00
6	.....	5.60	5.54	7.40	21	5.42	5.72	7.41	6.98
7	.....	5.61	5.51	7.20	22	5.40	5.71	7.40	7.00
8	.....	5.55	5.49	6.65	23	5.40	5.72	7.30	7.22
9	5.40	5.52	5.48	6.56	24	5.45	5.70	7.20	7.26
10	5.41	5.49	5.44	6.41	25	5.44	5.65	9.55	7.40
11	5.42	5.50	5.41	6.25	26	5.42	5.62	7.20	7.59
12	5.45	5.51	5.40	6.20	27	5.40	5.60	6.95	7.66
13	5.50	5.59	5.30	6.15	28	5.42	5.59	6.82	7.99
14	5.50	5.69	5.34	6.21	29	5.44	5.55	6.70	7.31
15	5.50	5.76	5.40	6.28	30	5.48	5.51	6.58	8.18
					31	.....	5.50	.....	7.95

MISCELLANEOUS MEASUREMENTS.

The following miscellaneous measurements have been made of streams tributary to the Pacific Ocean in California during 1911:

Miscellaneous measurements in south Pacific Ocean drainage basins in 1911.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
May 8	Ellis flume	Diverts from Sweetwater River.	Flume, ½ mile below point of diversion, near Descanso, Cal.		0.3
June 2	San Gabriel Water Co. canal.	Diverts from San Gabriel River.	Wading at intake, 100 feet above United States Geological Survey gaging station on San Gabriel River, near Azusa, Cal., NW. ¼ sec. 23, T. 1 N., R. 10 W.		6.2
22	do	do	do		15
Sept. 1	Simi Creek	Las Posas Creek	Simi, Cal., Ventura County		(a)
3	Piru Creek	Santa Clara River.	Wading 900 feet above Southern Pacific Railroad bridge at Piru, Ventura County.		16
Oct. 27	Sisar Creek	Santa Paula Creek	Wading 100 feet above mouth, about 5½ miles north of Santa Paula, Cal., SW. ¼ NW. ¼ sec. 16, T. 4 N., R. 21 W.		1.0
23	Matilija Creek	Ventura River	Wading 300 feet above junction of North Fork of Matilija Creek, SW. ¼ NW. ¼ sec. 28, T. 5 N., R. 23 W.		9.0
23	North Fork of Matilija Creek.	Matilija Creek	Wading 100 feet above mouth, SW. ¼ NW. ¼ sec. 28, T. 5 N., R. 23 W.		20
23	Flume	Diverts from North Fork of Matilija Creek.	Intake, SW. ¼ NW. ¼ sec. 28, T. 5 N., R. 23 W.		1.3
Sept. 9	Santa Maria River.	Pacific Ocean	Wagon bridge at Santa Maria, Cal, Santa Barbara County.		(b)
14	Carmel River	do	½ mile above mouth, near Monterey, Cal., Monterey County.		c 3
10	Salinas River	Monterey Bay	Wagon bridge at San Miguel, Cal., San Luis Obispo County.		c 1
11	do	do	Wagon bridge at Bradley, Cal., Monterey County.		c 2
10	Estrello Creek	Salinas River	Mouth, near San Miguel, Cal., San Luis Obispo County.		(b)
11	San Antonio River	do	1½ miles above mouth, near Bradley, Cal., Monterey County		(b)
12	San Lorenzo River	do	Mathews damsite, 5 miles east of King City, Cal., 100 feet below old United States Geological Survey gaging station.		9.1

a Water standing in pools. b Dry. c Estimated.

Miscellaneous measurements in San Francisco Bay drainage basins in 1910.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
1910.				*Feet.*	*Sec.-ft.*
June 3	Sonoma Creek	San Pablo Bay	Wading at bridge, ½ mile north of Eldredge, Cal.		4.8
July 9	do	do	do		5.6
Aug. 16	do	do	do		.9
June 3	do	do	Wading 200 feet above bridge, 1½ miles south of Sonoma, Cal.		5.9
July 9	do	do	do		2.4
Aug. 16	do	do	do		7.4
June 3	Arroyo Seco	Sonoma Creek	Wading 50 feet above bridge, 2½ miles south of Sonoma, Cal.		.2
May 24	Napa River	San Pablo Bay	Wading under bridge, at Calistoga, Cal.		2.0
July 12	do	do	do		.3
Aug. 13	do	do	do		.1

Miscellaneous measurements in San Francisco Bay drainage basins in 1910—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
1910. May 26	Napa River	San Pablo Bay	Wading 100 feet below bridge on road from Bale railroad station, 4 miles north of St. Helena, Cal.		5.1
July 13	do	do	do		1.5
Aug. 14	do	do	do		.4
May 26	do	do	Wading 75 feet below bridge 1 mile northeast of Helena, Cal.		5.5
July 13	do	do	do		1.4
Aug. 14	do	do	do		.4
May 27	do	do	Wading at bridge 1 mile east of Rutherford, Cal.		1.1
July 13	do	do	do		2.7
Aug. 14	do	do	do		1.4
1911. Aug. 28	do	do	Wading 600 feet below second bridge, 6 miles northwest of Napa, Cal.		2.7
1910. May 26	Lyman Creek	Napa River	Wading 30 feet below bridge, 3 miles north of St. Helena, Cal.		0.7
July 13	do	do	do		.4
Aug. 14	do	do	do		.2
May 26	Bell Creek	do	Wading 150 feet below bridge, 2 miles north of St. Helena, Cal.		.6
27	Conn Creek	do	Wading 75 feet below bridge on Skellenger ranch, 3 miles southeast of Rutherford, Cal.		.3
July 13	do	do	do		.0
May 27	Rector Creek	Conn Creek	Wading 200 feet above Frey dam, 3 miles northeast of Yountville, Cal.		1.3
July 13	do	do	do		.6
Aug. 15	do	do	do		.7
May 28	Dry Creek	Napa River	Wading 1,000 feet above second dam, 2 miles west of Oak Knoll, Cal.		4.0
July 14	do	do	do		.2
Aug. 15	do	do	do		.0
May 28	do	do	Wading 300 feet below bridge, ½ mile south of Trubody, Cal.		.2
June 2	Milliken Creek	do	Wading at bridge, 4 miles northeast of Napa, Cal.		.3
July 14	do	do	do		.2
May 28	do	do	Wading 600 feet below bridge, 2½ miles northeast of Napa, Cal.		.5
July 14	do	do	do		.1
Aug. 15	do	do	do		.1
May 28	North Branch of Napa River.	do	Wading 300 feet above stone bridge, 3 miles west of Napa, Cal.		1.0
July 14	do	do	do		.0

NOTE.—These measurements were made by United States Department of Agriculture, Irrigation Investigations. (Furnished by Frank Adams, irrigation manager, Berkeley, Cal.)

Miscellaneous measurements in San Joaquin River basin in 1911.

Tulare Lake basin.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Sept. 12	Powers ditch	Diverts from South Fork of Kern River.	At Warren Rankin ranch, near Onyx, above regular United States Geological Survey gaging station on South Fork of Kern River, NW. ¼ NW. ¼ sec. 24 T. 25 S., R. 35 E.		2.7
Nov. 16	do	do	At Warren Rankin ranch, near Onyx, above regular United States Geological Survey gaging station on South Fork of Kern River, NW. ¼ NW ¼ sec. 24 T. 25 S., R. 53 E.		1.1
Jan. 17	Posey Creek	Tulare Lake	Above Carver ditch		3.5

Miscellaneous measurements in San Joaquin River basin in 1911—Continued.

Tulare Lake basin—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Jan. 19	White River	Tulare Lake	At White River, Cal., 3½ T. 24 S., R. 29 E.		2.2
Mar. 8	do	do	do		30
Jan. 25	Rancheria Creek	Bear Creek	About 8 miles northeast of Daunt, Cal., near mouth, 300 feet below gage on Bear Creek.		29
Mar. 14	do	do	do		13
11	South Fork of Kaweah River.	Tulare Lake	Bridge below Three Rivers, Cal., SW. ¼ sec. 26 T. 17 S., R. 28 E.		302
12	do	do	do		221
May 19	do	do	do		229
Sept. 18	do	do	Wading ½ mile above Maxon ranch, above all diversions, near Three Rivers, Cal., sec. 15, T. 18 S., R. 29 E.		6.0
Nov. 23	Mehrten ditch	Diverts from South Fork of Kaweah River.	Near Three Rivers, Cal., sec. 15, T. 18 S., R. 29 E.		.5
Sept. 16	Sugar Pine Company flume.	Diverts from Fresno River.[a]	Near gage on Fresno River, 9 miles from Raymond. NE. ¼ sec 15, T. 8 S., R. 20 E.		7.2
Nov. 10	do	do	do		10

[c] Also feeder from Big Creek, South Fork of Merced River drainage.

Main San Joaquin River and tributaries.

				Feet.	*Sec.-ft.*
July 24	Middle Fork of San Joaquin River.	San Joaquin River.	Meadow at Devil Postpile, Mount Lyell quadrangle.		[a] 593
26	do	do	do		
29	Shadow Creek	Middle Fork of San Joaquin River.	Outlet of Shadow Lake, Cal., NW. ¼ sec. 17, T. 3 S., R. 26 E.		418 [b] 160
28	Minaret Creek	do	At meadow near mouth about 1½ miles north of Devil Postpile, Cal.		69
28	Soda Meadow Creek.	do	Wading near mouth, about ½ mile north of Devil Postpile.		6.9
30	King Creek	do	Wading just below Mammoth trail ford, ¾ mile south and 1 mile west of Devil Postpile bridge crossing on main trail from Jackass Meadow to Mammoth Pass.		56
23	North Fork of San Joaquin River.	do	At Soda Spring, Mount Lyell quadrangle, wading at wagon trail crossing.		594
31	Granite Creek	do	SW. ¼ sec. 5, T. 5 S., R. 25 E. Wading near mouth.		117
31	Little Jackass Creek.	Granite Creek	NW. ¼ sec. 5, T. 5 S., R. 25 E		11
15	Jackass Creek	San Joaquin River	Wading below ford on McCreary-Shuteye trail, NE. ¼ sec. 2, T 6 S., R. 24 E, Kaiser quadrangle.		58
14	Chiquito Creek	do	Wading at Big Shuteye trail ford, Browns Meadow, SW. ¼ sec. 29, T. 6 S., R. 24 E.		190
13	Whisky Creek	North Fork	Wading above wagon bridge at Cascadel ranch, near North Fork, Cal., SE. ¼ sec. 16, T. 8 S., R. 23 E.		12
13	Cascadel Creek	Whisky Creek	Wading below gage of San Joaquin Light & Power Co. near Cascadel ranch, near North Fork, Cal., SE. ¼ sec. 16, T. 8 S., R. 23 E.		1.4
16	Merced River	San Joaquin River.	Old United States Geological Survey gaging station at wagon bridge at Yosemite, Cal.	7.15	2,550
Aug. 18	do	do	Wading 500 feet above United States Geological Survey gage at Yosemite, Cal.	3.35	269

[a] Stream was divided into two channels, east channel measured, west channel estimated from measurement made July 26. East channel carried 268 second-feet July 24, and 189 second-feet July 26.
[b] Estimated.

Miscellaneous measurements in San Joaquin River basin in 1911—Continued.

Main San Joaquin River and tributaries—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
July 16	Tenaya Creek	Merced River	Old United States Geological Survey gaging station at wagon bridge near Yosemite, Cal.	5.58	325
Aug. 19	do	do	Wading 500 feet above United States Geological Survey gage, near Yosemite, Cal.		11
July 16	Yosemite Creek	do	Old United States Geological Survey gaging station at wagon bridge, ½ mile from Yosemite, Cal.	8.38	227
Aug. 18	do	do	Wading about 200 feet above United States Geological Survey gage at Yosemite, Cal.		12
22	South Fork of Merced River.	do	Wading above mouth of Big Creek, about ½ mile west of Wawona, Cal.		27
22	Big Creek	South Fork of Merced River.	At mouth, about ½ mile west of Wawona, Cal.		20
July 18	Tuolumne River	San Joaquin River	Highway bridge in Tuolumne Meadows, Mount Lyell quadrangle.		1,250
Aug. 28	South Fork of Tuolumne River.	Tuolumne River	Wading just above sawmill at Sequoia, Cal.	*a* .65	23
28	Middle Fork of Tuolumne River.	South Fork of Tuolumne River.	Wading ½ mile above junction with South Fork below new bridge on San Francisco road, ¾ mile north and ¾ mile east of Colfax Gate, Sonora quadrangle.		9.5
Sept. 22	Mokelumne River *c*	San Joaquin River.	Wading 200 feet below Weather Bureau gage, above power house of Pacific Gas & Electric Co., at Electra, Cal.	.09	44
22	do *b*	do	Wading ¼ mile below Pacific Gas & Electric Co.'s power house at Electra, Cal.		253
Oct. 12	do	do	Wading 600 feet above power house of Pacific Gas & Electric Co. at Electra, Cal.	.16	51
13	do	do	Wading 200 feet below toll bridge on Mokelumne Hill to Jackson, Cal., 1 mile northwest of Mokelumne Hill, Cal.		223
Sept. 23	North Fork of Mokelumne River.	Mokelumne River.	Wading 300 feet below highway bridge 1½ miles northwest of West Point, Cal.		7.4
Oct. 10	Upper flume	Diverts from North Fork of Mokelumne River.	At gaging station of Pacific Gas & Electric Co., about 2½ miles northwest of West Point, Cal.	3.78	129
10	Lower flume	do	In flume opposite suspension footbridge about 2½ miles northwest of West Point, Cal.		54
11	South Fork of Mokelumne River.	Mokelumne River.	Wading 300 feet below bridge 1 mile north of Railroad Flat, Cal. *c*		16
Sept. 23	do	do	Foot log 200 feet below highway bridge about 2 miles northeast of Glencoe, Cal.		31
Oct. 11	Licking Fork of Mokelumne River.	South Forth of Mokelumne River.	Wading 30 feet below bridge on West Point to Railroad Flat road 1½ miles north of Railroad Flat, Cal. *d*		11
Sept. 23	Middle Fork of Mokelumne River.	do	Wading 100 feet below highway bridge 1½ miles south of West Point, Cal.		9.3
Oct. 6	Dry Creek	Mokelumne River.	Wading 600 feet below mouth of Jackson Creek, 7 miles southwest of Ione, Cal.		8.1
8	Sutter Creek	Dry Creek	At damsite about ½ mile below Volcano, Cal.		3.5
8	do	do	do		3.3
6	Jackson Creek	do	At mouth, 7 miles southwest of Ione, Cal.		(*e*)

a Gage is ½ inch diameter iron bar, graduated; located on left bank close to a small bowlder and near a cedar tree with dead top, near sawmill.

b The difference in discharge above and below the power house, 209 second feet, is the amount of water in the power canal at Electra.

c Water surface 2.7 feet below top point of rock in front of 8-inch stump 10 feet below largest rock on left bank.

d Water surface 4.88 feet below 8d. nail in south bridge pier, middle of river.

e Dry.

Miscellaneous measurements in San Joaquin River basin in 1911—Continued.

Main San Joaquin River and tributaries—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Aug. 13	Cosumnes River...	Mokelumne River.	Wading below North Fork of Cosumnes River at Huse Bridge, Cal.	.....	35
12	North Fork of Cosumnes River.	Cosumnes River...	At Bucks Bar, Cal.....	.....	25
13	South Fork of Cosumnes River.	.....do	Wading just above junction with North Fork of Cosumnes River at Huse Bridge, Cal.	.....	12
Oct. 12	Middle Fork of Cosumnes River.	South Fork of Cosumnes River.	At Bakers Ford, Placerville quadrangle.	.....	19

Miscellaneous measurements in Sacramento River basin in 1911.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Oct. 15	Sacramento River.	San Francisco Bay.	Downstream side of highway bridge of Colusa, Cal.	[a]1.84	6,470
16	.....do.....	.....do.....	Downstream side of railroad bridge at Knights Landing, Grafton post office, Cal.	[a] [b].60	6,100
Dec. 19	.....do.....	.....do.....	.....do.....	[a] [c].86	6,450
Aug. 16	Pit River	Sacramento River.	Wading, 400 feet above highway bridge at Pitville, Cal., sec. 18, T. 37 N., R. 5 E.	.....	36
May 13	H. M. Wilcox ditch.	Diverts from Hat Creek.	Intake, Hat Creek, Cal., crossing of Hat Creek road.	.....	[d]49.0
Aug. 15	.....do	.....do.....	Wading, 30 feet below head gates above Hawkins' ranch near Hat Creek, Cal.	....	39.4
May 13	H. Morris ditch....	.....do.....	300 feet below intake at Hat Creek,	.....	[e]12.2
	L. H. Sullivan et al., ditch.	.....do.....	.....do.....	.....	[e]8.3
	Olive Opdyke ditch.	.....do.....	600 feet below intake, Hat Creek, Cal.	....	[e]5.0
	M. A. Reives ditch.	.....do.....	900 feet below intake, Hat Creek, Cal.	.....	[f]12.0
	Anderson et al., ditch.	.....do.....	Intake, Hat Creek, Cal.....	.....	[g]9.6
	Anderson et al., lateral.	.....	.....do.....	.....	[h]7.4
	O. R. L. lateral to Anderson et al., ditch.	.....	Head gate, Hat Creek, Cal.....	.....	2.2
	P. M. Honn ditch..	.....do	.....	.....	[i]4.8
Aug. 12	Nelson Creek.....	Pit River.....	Wading 400 feet above mouth and 80 feet below highway bridge ¾ mile above Henderson, Cal., sec. 31, T. 37 N., R. 1 E.	.....	30
11	Hatchet Creek.....	.....do	Lower road crossing, Montgomery Creek to Henderson, Cal., sec. 24, T. 35 N., R. 1 W.	.....	[k]40
11	Roaring Creek.....	Hatchet Creek....	Lower road crossing, Montgomery Creek to Henderson, Cal., sec. 14, T. 35 N., R. 1 W.	.....	[k]18
May 25	Squaw Creek.....	Pit River.....	Wading ½ mile below Winthrop, Cal.	[l]5.00	270

[a] Weather Bureau gage.
[b] Southern Pacific Co.'s gage read 23.40 feet.
[c] Southern Pacific Co.'s gage read 23.60 feet.
[d] Very nearly ½ of flow immediately returns to creek; ¼ used for irrigation eventually returns in several streams.
[e] No waste returns to Hat Creek above regular gaging station.
[f] About ⅔ of flow wastes back into creek.
[g] 7.0 second-feet returns to creek.
[h] About 2 second-feet wastes back into creek.
[i] Diversion from an old channel of Hat Creek; ⅔ of flow wastes back into this channel and returns to main creek.
[k] Estimated.
[l] Gage height observed on June 24, 1911, was 4.3 feet.

Miscellaneous measurements in Sacramento River basin in 1911—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Sept. 29[a]	Cow Creek	Sacramento River.	Wading 300 feet below bridge, 1 mile east of Millville, Cal., sec. 14, T. 31 N., R 3 W.	.....	70
Aug. 18	North Fork of Cow Creek.	Cow Creek	Wading 150 feet above highway bridge, about 11 miles northeast of Millville, Cal., sec. 16, T. 32 N., R. 3 W.	.....	54
18	Canal, diverting from North Fork of Cow Creek.	.....	Road crossing 10 miles northeast of Millville, Cal., near Basin Hollow, sec. 20, T. 32 N., R. 1 W.	.....	12
10	Little Cow Creek	Cow Creek	Wading 6 feet below lower side of bridge, stage road crossing on road from Oak Run to Buzzards Roost, Cal., sec. 4, T. 33 N., R. 1 W.	(*b*)	7.0
11	Terry Lumber Co.'s flume.	(*c*)	½ mile above Buzzards Roost, Cal.	.....	19
Sept. 29	Bear Creek	Sacramento River.	Wading 50 feet below bridge, 2 miles north of Balls Ferry, sec. 15, T. 30 N., R 3 W.	.....	40
Oct. 12	Cottonwood Creek	do	Wading 7 miles above Cottonwood, Cal.	.....	28
Aug. 19	Battle Creek	.....	Wading just below new power house of Northern California Power Co., 5 miles southeast of Balls Ferry, Cal.	.....	352
22	Antelope Creek	Sacramento River.	Wading ½ mile above dam of Red Bluff City water works, about 10 miles east of Red Bluff, Cal., sec. 1, T. 29 N., R. 3 W.	.....	50
Oct. 9	do	do	Wading 200 feet below old power dam near mouth of canyon, near Red Bluff, Cal.	.....	83
Aug. 24	Deer Creek	do	Wading 120 feet below sheep bridge near mouth of canyon, about 8 miles northeast of Vina, Cal., sec. 23, T. 25 N., R 1 W.	.....	156
Sept. 11	Indian Creek	North Fork of Feather River.	Wading about 1,000 feet above intake of Taylorsville mill race at Taylorsville, Cal.	.....	*d* 52
11[e]	Taylorsville mill race.	Diverts from Indian Creek.	Wading 500 feet below intake at Taylorsville, Cal.	.....	33
18[f]	South Fork of Feather River.	Middle Fork of Feather River.	Wading 75 feet below highway bridge at Enterprise, Cal., sec. 1, T. 19 N., R. 6 E.	.....	2.2
18	Palermo Land & Water Co. ditch.	Diverts from South Fork of Feather River.	In flume at Enterprise, Cal.	.....	37
Aug. 18	South Fork of Yuba River.	Yuba River	At Emigrant Gap, Cal.	.....	*g* 2
15	Bear River	.....	Below Pacific Gas & Electric Co.'s diverting dam, near Colfax, Cal.	.....	12
Sept. 28	do	.....	do	.....	18
Oct. 20	do	.....	do	.....	2.1
Sept. 28	Pacific Gas & Electric Co.'s canal.	Bear River	Made in flume of Pacific Gas & Electric Co., 600 feet below dam, near Colfax, Cal., sec. 22, T. 15 N., R. 9 E.	2.87	46
Oct. 29	Kelsey Creek	Clear Lake	Highway bridge at Kelseyville, Cal. (head of Cache Creek).	.....	(*h*)
30	Seigler Creek	Cache Creek	At mouth at Lower Lake, Cal.	.....	*g* ¼

a Made by Irrigation Investigations, United States Department of Agriculture.
b Water surface 2.10 feet down from top of nail head near upstream end of bridge pier on left bank (nail projects ½ inch).
c Diverts water from Montgomery Creek into Little Cow Creek.
d Total flow available at Taylorsville.
e This ditch is now used to divert water for irrigation in Indian Valley.
f The measured flow of Palermo Land & Water Co. ditch, which diverts from South Fork of Feather River 1½ miles above the bridge should be added to give total normal flow. There is some small leakage through dam, some waste from ditch, and also some water enters from two small streams, nearly dry, between point of diversion and bridge.
g Estimated.
h Dry.

Miscellaneous measurements in north Pacific Ocean drainage basins in 1910–11.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
1910.					
May 17[a]	Russian River	Pacific Ocean	Wading 200 feet above East Fork Russian River, 3 miles north of Ukiah, Cal.		19
July 5[a]	do	do	Wading 100 feet above East Fork of Russian River, 3 miles north of Ukiah, Cal.		2.8
May 16[a]	do	do	Wading 200 feet south of telephone crossing, 1 mile east of Ukiah, Cal.		96
1911.					
May 29[a]	do	do	do		229
Aug. 30[a]	do	do	Wading 200 feet below dridge, 3 miles southeast of Ukiah, Cal.		6
1910.					
May 18[a]	do	do	Wading 700 feet above bridge, ½ mile west of Hopland, Cal.		238
19[a]	do	do	Wading 100 feet south of south end of pile bulkhead, 1 mile north of Cloverdale, Cal.		289
1911.					
Aug. 29[a]	do	do	Wading at bridge, 4 miles north of Healdsburg, Cal.		17
1910.					
May 20[a]	do	do	Wading 1,000 below highway bridge, at Healdsburg, Cal.		348
17[a]	East Fork of Russian River.	Russian River	Wading 200 feet above mouth, 3 miles north of Ukiah, Cal.		207
July 5[a]	do	do	Wading 100 feet above mouth, 3 miles north of Ukiah, Cal.		22
1911.					
Nov. 2	Ackerman Creek	do	Wagon bridge near mouth, about 2 miles north of Ukiah, Cal.		(b)
2	Orr Creek	do	Wagon bridge near mouth, about ½ mile north of Ukiah, Cal.		(b)
Oct. 29	Pieta Creek	do	Near mouth, about 1 mile south of Pieta, Cal.		c 2
1910.					
May 25[a]	Kellogg Creek	do	Wading 100 feet below mouth of Yellowjacket Creek at Kellogg, Cal.		2.6
July 12[a]	do	do	do		.7
May 25[a]	Yellowjacket Creek	Kellogg Creek	Wading 50 feet above Chas. Foote's dam, 1 mile east of Kellogg, Cal.		2.7
Aug. 13[a]	do	do	do		.7
13[a]	Mill Creek	do	Wading 1 mile above mouth, 1 mile north of Kellogg, Cal.		.8
1911.					
Nov. 20	Honey Dew Creek	Mattole Creek	Wading at mouth, sec. 6, T. 3 S., R. 1 E., H. M.		13
21	Squaw Creek	do	Mouth, sec. 30, T. 2 S., R. 1 W., H. M.		c 2
22	North Fork of Mattole Creek.	do	Ford near mouth, sec. 4, T. 2 S., R. 2 W.		c 3
22	Davis Creek	Pacific Ocean	Road crossing near mouth, sec. 13, T. 1 S., R. 3 W.		c ½
22	Bear River	do	Near mouth, Capetown, Cal., sec. 13, T. 1 N., R. 3 W., H. M.		c 5
1905.					
Sept. 3[d]	South Eel River	Eel River	Just above Preston, Mendocino County, Cal.		5.5
1911.					
Nov. 4	Tomki Creek	South Eel River	Road crossing on road from Willits to Hearst, Cal., sec. 26, T. 19 N., R. 13 W.		(b)
5	Burger Creek	Eel River	Bridge on road between Laytonville and Covelo, Cal., sec. 10, T. 21 N., R. 14 W.		c ¼
16	do	do	do		c 1
19	Redwood Creek	South Fork of Eel River.	Briceland, Cal., sec. 18, T. 4 S., R. 3 E.		c ½
Sept. 22	Healy Creek	Van Duzen River.	Near mouth, wagon bridge on road from Carlotta to Bridgeville, Cal.		c .1
Oct. 19	do	do	do		c .2
Sept. 22	Grizzly Creek	do	Near mouth, bridge on road from Carlotta to Bridgeville, Cal.		c ¼
Oct. 19	do	do	do		c ¼

[a] Made by United States Department of Agriculture, Irrigation Investigations.
[b] Dry.
[c] Estimated.
[d] Furnished by Snow Mountain Water & Power Co.

Miscellaneous measurements in north Pacific Ocean drainage basins in 1910–11—Contd.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
1911.				*Feet.*	*Sec.-ft.*
Sept. 21[a]	Lawrence Creek	Yager Creek	500 feet below Booth Run, Cal.		1.5
19[a]	Mad River	Pacific Ocean	Wading just below mouth of Bug Creek, sec. 9, T. 3 N., R. 4 E.		4.6
4	Little River	do	Railroad bridge, about 5½ miles southeast of Trinidad, Cal., sec. 9, T. 7 N., R. 1 E.		[b] 3
Nov. 29	do	do	Wagon bridge, about 3 miles southeast of Trinidad, Cal., sec. 6, T. 7 N., R. 1 E.		[b] 2
Sept. 5	Maple Creek	Big Lagoon	Wagon bridge, sec. 20, T. 9 N., R. 1 E.		[b] 1
Nov. 29	do	do	do		[b] 1
Sept. 5	McDonald Creek	Stone Lagoon	Wagon bridge, sec. 29, T. 10 N., R. 1 E.		[b] ½
4	Minor Creek	Redwood Creek	Mouth, sec. 28, T. 7 N., R. 3 E		[b] ¼
Oct. 14	do	do	do		[b] ¾
Sept. 5	Prairie Creek	do	Wagon bridge at Prairie, Cal., sec. 2, T. 11 N., R. 1 E.		[c]
Nov. 29	do	do	do		[b] 2
Aug. 22[d]	Shasta River	Klamath River	Wading 150 feet below Southern Pacific Railroad bridge, 2 miles south of Montague, Cal., sec. 33, T. 45 N., R. 6 W.		111
21[d]	Little Shasta River.	Shasta River	Wading, 1½ miles northeast of Little Shasta, Cal., sec. 17, T. 45 N., R. 4 W.		7.2
Sept. 3	Siskiyou Electric Co. ditch.	Diverts from Shasta River.	900 feet below diversion dam, 4 miles north of Yreka, Cal.		107
Apr. 10	Scott River	Klamath River	Highway bridge, 1 mile below Callahan.	[e]	372
May 30	do	do	do	[f]	575
Sept. 20	do	do	do	[g]	17
Nov. 1[d]	do	do	Wading at bridge, 3 miles north of Callahan.		14
Aug. 30[d]	do	do	Wading 150 feet above bridge, 7 miles west of Fort Jones, Cal., sec. 26, T. 44 N., R. 10 W.		40
Sept. 8	Indian Creek	do	Highway bridge at Happy Camp, Cal., sec. 11, T. 16 N., R. 7 E.	[h]	[i] 52
Aug. 24	Trinity River	do	Wading ½ mile above mouth of North Fork of Trinity River near Helena, Cal., sec. 33, T. 34 N., R. 11 W.		220
20	Trinity Land & Cattle Co. ditch.	Diverts from East Fork of Trinity River.	About 450 feet above road crossing about 3 miles southeast of Trinity Center, Cal.	1.62	11
21	Stewarts Fork of Trinity River.	do	Wading ½ mile above mouth, about 600 feet below mouth of Buckeye Creek and below a ditch diversion, 1½ miles south of Milnerville, Cal.		32
Sept. 30	do	do	do		33
29	Canyon Creek	do	Wading 600 feet above highway bridge about 1½ miles north of Junction City, Cal., sec. 36, T. 34 N., R. 11 W.		6.8
30	Canyon Creek ditch.	Diverts from Canyon Creek.	Intake 500 feet above highway bridge, about 1½ miles north of Junction City, Cal.		4.6
Aug. 25	Hay Fork of Trinity River.	South Fork of Trinity River.	Below junction with Salt Creek, sec. 10, T. 31 N., R. 12 W.		3.4
25	Salt Creek	Hay Fork of Trinity River.	Mouth, sec. 10, T. 31 N., R. 12 W.		.5
Oct. 7	Willow Creek	Trinity River	Wading 200 feet below bridge near mouth at China Flat, Cal., sec. 29, T. 7 N., R. 5 E.	[j]	7.3
Dec. 30	do	do	Wading 500 feet below bridge at China Flat, Cal.	[k]	36

[a] Made by R. L. Thomas, City Engineer of Eureka, Cal.
[b] Estimated.
[c] Dry.
[d] Made by United States Department of Agriculture, Irrigation Investigations.
[e] Water surface 13.78 feet below top of steel chord at second vertical from right abutment, upstream side.
[f] Water surface 13.37 feet below same reference point as used Apr. 10, 1911.
[g] Water surface 15.14 feet below reference point.
[h] Water surface 22.88 feet below small nail, upstream end of second floor beam from right abutment.
[i] About 8 second-feet diverted out of Indian Creek watershed for placer mine about ½ mile below Happy Camp on Klamath River.
[j] Water surface 2.00 feet below paint mark on rock under left nd of br dge.
[k] Water surface 1.64 feet below reference point established Oct. 7, 1911.

Miscellaneous measurements in north Pacific Ocean drainage basins in 1910–11—Contd.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
1911.				*Feet.*	*Sec.-ft.*
Oct. 9	Campbell Creek	Trinity River	Road crossing near mouth near south boundary of Hoopa Indian Reservation.		[a]2
Dec. 30	do	do	do		[a]½
Oct. 9	Hospital Creek	do	Mouth near Hoopa, Cal.		(b)
Dec. 30	do	do	do		[a]3
Oct. 9	Supply Creek	do	Wading at bridge near Hoopa, Cal.	(c)	3.7
Dec. 29	do	do	Wading 1,200 feet above mouth, near Hoopa, Cal.		25
14	Prairie Creek	Hunter Creek	Highway bridge about ½ mile northeast of Requa, Cal., above mouth, sec. 33, T. 14 N., R. 1 E.		[a]5
Nov. 29	Wilson Creek	Pacific Ocean	Road crossing about 4½ miles northwest of Requa, Cal., sec. 18, T. 14 N., R. 1 E.		[a]½
Sept. 7	Mill Creek	Smith River	Highway bridge near mouth on road from Crescent City to Gasquet, Cal., sec. 19, T. 16 N., R. 1 E.		[a]4
Dec. 1	do	do	do		[a]2

[a] Estimated.
[b] Dry.
[c] Water surface 1.00 foot below paint mark on bowlder under right end of bridge.

Miscellaneous measurements made in Klamath River drainage basin, 1910–11.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Apr. 21, 1910[a]	Miller Creek	Williamson River	Fish Lake, Oreg.		9.9
Sept. 1910[a]	do	do	do		3.3
Nov. 14, 1911	do	do	Beaver Marsh, Oreg.	0.92	10.3
16, 1911	Sand Creek	do	Near Chiloquin, Oreg.		14.5
Aug. 3, 1911	Fort Creek	Wood River	Near Fort Klamath, Oreg.		82.8
3, 1911	Crooked Creek	do	Near Klamath Agency, Oreg.		106
5, 1911	Crane Creek	do	Near Fort Klamath, Oreg.		10.4
5, 1911	Sevenmile Creek	Upper Lake	do		100
5, 1911	Rock Creek	do	Near Pelican, Oreg.		8.4
May 15, 1909	Fourmile Creek	do	At Fourmile Lake, Oreg		40
June 18, 1909	do	do	do		63
Aug. 14, 1909	do	do	do		2
May 20, 1910	do	do	do		60
June 17, 1910	do	do	do		5
Mar. 20, 1911	Surface water	Lost River	Clear Lake, Oreg		144
28, 1911	Buck Creek	do	Yonna, Oreg.		40.8

[a] Float measurements. Coefficient to reduce surface velocity to mean=.82.

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